POWER

605
v.74 pt.1

GENERAL INDEX TO VOLUME LXXIV

July—December, 1931

INDEX TO POWER
Pages by Issues

July	7	Pages	1-38
July	14	"	39-74
July	21	"	75-112
July	28	"	113-146
Aug.	4	"	147-184
Aug.	11	"	185-222
Aug.	18	"	223-256
Aug.	25	"	257-310
Sept.	1	"	311-344
Sept.	8	"	345-378
Sept.	15	"	379-412
Sept.	22	"	413-446
Sept.	29	"	447-482
Oct.	6	"	483-519
Oct.	13	"	520-554
Oct.	20	"	555-588
Oct.	27	"	589-624
Nov.	3	"	625-660
Nov.	10	"	661-694
Nov.	17	"	695-728
Nov.	24	"	729-776
Dec.	1	"	777-814
Dec.	8	"	815-848
Dec.	15	"	849-882
Dec.	22	"	883-918
Dec.	29	"	919-952

A

Academy of Political & Social Science—"Power and the public" discussed.... 717

ACCIDENTS AND ACCIDENT PREVENTION

Defective safety applications doubly dangerous 91
Explosions from flooded oil furnaces. William Anderson 649
Maintenance schedule for reliable operation. Marin Phillips 356
Oil burners need safety shut-off valve.. 399

ACCOUNTING

Building an efficient engineering organization *360
Chart for cost control of absorption refrigeration plant *762
Chart for cost control of air-compressing plant *758
Chart for cost control of air conditioning plant *764
Chart for cost control of boiler plant.... *752
Chart for cost control of compressor refrigeration plant *760
Chart for cost control for Diesel plant... *746
Chart for cost control of engine or turbine plant *748
Chart for cost control for hydro plant.. *744
Chart for cost control of water-heating plant *756
Chart for cost control of water-pumping plant *754
Cost analysis of plants (chart)..... *770
Fundamental approach to power costs.. 731
Master accounting form *735
Plant accounting 743
Power cost control applied to an industrial plant (chart) *766
Purchased and generated power costs. J. W. Romig 605
W. & J. Sloane know their power costs.. *538
Systemized power management saves dollars in industrial plant. J. C. Evans. *903

AIR COMPRESSORS

Care and operation of air compressors.. *294
Chart for cost control of air-compressing plant *758
Compressor horsepower 650
Compressor piston displacement..... 874
Economical operation of air compressors. 317
Moisture in compressor discharge..... 720
Overheating of air compressor..... 138
Position of idler to pervent slipping of belt. Martin, Rasmussen, Hulton, Packard, O'Regan, Jones, Wilson..... 508
Testing condition of metal in cylinder walls 434
Turbine-compressor set for Rosherville, South Africa *63

AIR CONDITIONING

Chart for cost control of air conditioning plant *764
Edison building in Los Angeles heated and cooled by electricity. H. L. Doolittle *348
Ionization may alter ventilating methods (Ed.) 590
Keeping a grill room cool. Knoy, Martin, Hudson, Anderson, Cramer 910

Page

Operation of air washer 402
Air Preheaters—Air heaters and their maintenance. L. C. Whiton, Jr..... *936
Preheating air with steam 616
Air preheaters. See also Combustion.
Airplane driven by steam turbine to be tested 514
American Chemical Society—Heat values of fuels discussed 373
American Engineering Council—Employment program (Ed.) 779
Public works program to aid unemployed 724
To stabilize employment 584
American Institute of Electrical Engineers—Power topics at West Coast meeting 372
American Society for Testing Materials—A.S.M.E. joins in annual meeting for search for better metals in high-temperature service 25
American Society of Heating & Ventilating Engineers—Research (Ed.) 346
American Society of Mechanical Engineers—A.S.T.M. joins in annual meeting to seek better metals for high temperatures 25
Boiler feed-water studies 829
Central station session 820
Cost of operating Diesel power plants.. 387
52d annual meeting in New York *817
Fusion welded drums authorized 107
General chemical and physical properties of refractories *614
Lubrication research 830
Oil and Gas Power Division holds fourth national meeting at Madison, Wis... *7
Oil and gas power division reviews marine Diesels 824
Operating and test data on extra-high-pressure boilers 822
Pump and piezometer studies feature hydraulic sessions 826
Pure Air Body announces objectives.... 726
Regional meeting 437
What do engineers earn? 318
Wire rope research 479
American Standards Assn.—1931 electrical code approved 442
American Welding Society—Structural steel and pipe welding at meeting *504

ASH HANDLING

Fluxing of ashes and slags—A.S.M.E. meeting 828
Smoke inspectors to attack fly ash problem 62
Use for fly ash (Ed.) 816

AWARDS

L. P. Alford receives Gantt medal..... 658
Michael Pupin awarded John Fritz medal 621
Dr. E. W. Rice awarded Edison medal..*916

B

BEARINGS

Care will prevent anti-friction trouble. Elmer Zitzewitz 433
Eliminating oil vapor from steam turbine bearings 332
Experiments on bearing film pressures—A.S.M.E. meeting 830
Hand-scraping oil engine bearings. Donald Raeburn 168, 246
Maximum conditions in journal bearings—A.S.M.E. meeting 830

BELTS

Air cushion in belt drives. H. M. Plaisted 95
Idler pulley adjusted to prevent belt slippage. Noble, Wisinski *613
Position of idler to prevent slipping of belt 509
Removal of static from belts. Christfield, Rosenberg, Simpson, Conroy, Sachs, Warden, Nichols 473
Which side of leather belt to pulley?.... 434
Binary cycle—Binary-vapor cycles (Ed.)... 115

BOILERS

Accepted practice in pulverized fuel firing *266
Automatic combination control at Powerton Station *314
Banking fires on overfeed stokers. H. M. Spring 533
Banking oil-fired boilers 939
Benson steam generator at Langerbrugge, Belgium 927
Boiler compound feeder. L. W. Ross..*170
Boiler gage glass readings are misleading. Grant Campbell *925

Page

Boiling out a boiler 138
California boiler code adds new safety rules 68
Chart for cost control of boiler plant.... *752
Composite gas sampler for boiler gases. H. F. Mullikin *837
Compressed air used to clear blowdown line *863
Compression of liquid water. R. C. Heck. *422
Conservation of heat in blowdown..... 874
Continuous blowdown at Anheuser-Busch, Inc. A. B. Stickney *19
Corn Products Refining Company boiler plant *293
Damper regulation and its effect on boiler efficiency. R. H. Parrish 648
Deconcentrator vs. continuous blowdown 720
Detecting loose rivets in boiler drums.. 98
Determining the thickness of heads..... 28
Developing a furnace to burn anthracite buckwheat *137
Dual firing for peak loads (Ed) 850
Durability of steam boilers. J. Allison.. 839
Eaton method for controlling electric steam generators to maintain pressure or power input constant (Shawinigan Chemicals, Ltd.) *458
Electric steam boilers (Ed.) 380
Feedwater studies started by Joint Research Committee 725
Foaming and priming from soda ash ... 98
Foaming and priming of boiler water—A.S.M.E. meeting 829
Ford Motor Company's 1,200 lb. steam plant—A.S.M.E. meeting 822
Furnace volume for gas burning 874
Fusion welded drums authorized by A.S.M.E. Boiler code committee..... 107
Gage-glass readings may belie true water level. E. H. Krieg *48
Handling closed heaters, evaporators and feed regulators *268
High feed line pressure. Byrne, Sorrels, Knoy, Cuzner 175
High pressure boiler and turbine operation at Northeast Station. J. A. Keeth.. *304
Improper feeding connection floods heating boiler. J. D. Arnester..... *677
Improvised tube cutter for return tubular boilers. G. G. McVickers..... *58
Increasing boiler capacity. W. F. Schaphorst 682
Industrial boiler plant design. H. Bleibtreu *493
Marine critical-pressure boiler *870
Method of feeding wood refuse..... *574
Modern boiler equipment broadens choice of fuels (Ed.) 148
Natural gas burned under new 1,400 lb. boilers at Deepwater, Texas. J. B. Nealey (Houston Light & Power Co.) *78
New era in boiler construction (Ed.).... 114
New furnace forces air through pulverized coal *65
Obtaining boiler efficiency by heat balance 101
Once-through series boiler — A.S.M.E. meeting 823
Operating characteristics of overfeed stokers *858
Operating non-return valves 687
Operating results of a series steam generator—A.S.M.E. meeting 822
Operation of high pressure boilers. W. F. Ryan *261
Paper mill reduces steam consumption 30 per cent per unit production (Abitibi Power & Paper Co.). Hurter & Stuart. *639
Performance of modern steam-generating units—A.S.M.E. meeting 820
Pressure vessel inspector's job. E. R. Fish 328
Priming of boiler 210
Progress report on boiler feed-water studies—A.S.M.E. meeting 830
Proper settings of superheater safety valve. M. P. Jared 170
Purdue high-pressure boiler. Potter, Hawkins & Solberg *708
Refractories—general chemical and physical properties—A.S.M.E. meeting 614
Repairing steam injector nozzles 59
Rise of pressure in boiler-feed line. Veenschoten, Merrell 366
Sales decline 34
Sales increasing 690
Sales of boilers first half of 1930 and 1931 216
Sales in boiler-feed water reduce priming. C. W. Foulk *165
Setting of superheater safety valves. R. Septor 541
Simplified practice body studies heating boilers 342
Size of boiler blowdown tank 210
Size of boilers for laundry plant. A. A. Baco 247
Size of boilers for plant 28
SO_2—CO_2 ratio for prevention of boiler scale—A.S.M.E. meeting 829

(*) Illustrated. (Ed.) Editorial.

Page

Solubility of calcium salts in boiler water—A.S.M.E. meeting 820
Soot blower operation at Mad River (Ohio Edison Co.). J. W. Mikels..... *940
Standard boiler water condition. J. B. Swift 363
Station A at San Francisco rebuilt—three high-pressure boilers installed in place of fifteen old boilers (Pacific Gas & Electric Co.). C. E. Steinbeck..... *697
Steadying the level in water tube boilers. D. J. Allison *299
Steam and air soot blowers 946
Steam capacity of generating plant. Spring, Fox, Martin, Maynz, Anderson 580
Superheated steam from boiler 910
Testing for leaks 473
Traveling and chain-grate stokers *932
Treating high-pressure boiler feed (Ed.). 850
Tube failures in 1,400 lb. boilers (Mannheim boilers) *542
Underfeed stokers for heating, industrial and power boilers *898
Warming-up time decreased on large fire-tube boilers 461
Waste-heat boilers added by Central Iron Co. 621
Waste-heat boilers supply steam to copper refinery (Ontario Refining Co.). W. F. Mills *851
Water heating boiler bursts in Chicago 585
Welded fire-tube boiler. R. L. Booth..... 873
What pressure should superheater safety valve be set to operate. Spring, Wertheim, Byrne, Bescaby, Jones, Mayes 60
Yarnall-Waring 2,500 lb. boiler. D. R. Yarnall *801
Bolts, gripping foundation, for heavy machines. J. T. Towlson *247

BOOK REVIEWS

America's answer to the Russian challenge. Robert Sibley 176
Applied kinematics. J. H. Billings..... 31
A.S.T.M. tentative standards, 1931..... 806
Alternating currents. C. E. Magnusson.. 652
American standard: safety code for elevators, dumbwaiters and escalators... 511
Analytical mechanics. H. M. Dadourian. 511
Balancing of machinery. C. N. Fletcher. 806
Commutator motor. F. J. Teago..... 652
Corrosion of power-plant equipment by flue gases. H. F. Johnstone 30
Design of dams. Hanna & Kennedy..... 652
Economics for engineers. Bowers & Rowntree 337
Electric light and power industry in the U. S. 337
Electrical drafting and design. C. C. Bishop 31
Electrical engineering. C. V. Christie..... 652
Heat engines. J. R. Allen..... 652
Ignition and combustion process in the pulverized coal engine. Wolfram Wentzel 176
Interstate transmission of electric power. H. L. Elsbee 337
Mechanical laboratory methods. J. C. Smallwood 31
Modern combustion, coal economics and fuel fallacies. C. V. Beck..... 176
Municipal ownership and the changing technology of the electric industry in the west north central geographic division. P. J. Raver 30
Nature of a gas. L. B. Loeb..... 337
Noise and vibration engineering. S. E. Slocum 806
Petroleum products and lubricants, methods of test 652
Plasticity. Nadai and Wahl 510
Preparation, selection and distribution of coal 806
Report of structural steel welding committee of the American Bureau of Welding 510
Revised heat drop tables. Herbert Moss 30
Roeblings. Hamilton Schuyler..... 807
Sags and tensions in overhead lines. C. G. Watson 177
Steam power and internal combustion engines. Craig & Anderson 510
Steam turbine operation. W. J. Kearton. 176
Steam turbines 177
Warmespannungen in Gleichdruckwarmespeichern. E. Mayer 510
Der Warmeubergang im Luftkompressor. Karl Kollmann 653
Your health and your earning power.... 806
Brazing carbon steel. B. W. Wheeler.... 503
British Assn. for the Adjustment of Science —Centenary meeting 577
Business stabilization 823

C

CABLES

Method of renewing cable sheaves. W. S. Whiting, Jr. *57
New control cables have improved characteristics. H. M. Friend *666
New specifications for power control cables *943
Chimneys—Razing a brick chimney 434
Repairing brick chimneys. P. H. Walker. *209
Size of stack..... 874
China—Electrical interests reorganized.. 103
Hongkong Electric supply system expanding. Walter Buchler *619

Page

COAL

Ash fusion temperature 206
Bituminous Coal Conference stresses need for stability in the industry *790
Burning low quality coal at Anheuser-Busch plant. A. B. Stickney..... *243
Coal silos for central stations (Ed.).... 816
Conference Board analyzses competitive status of coal 879
Consumption for operation of steam jets. 210
Consumption increased 31% but kilowatt-hour output 150% (Ed.) 380
Developing a furnace to burn anthracite buckwheat *137
Estimating weight of coal in storage pile 174
Feeding coal to elevator with compressed air. T. M. Street *247
Grindability of coal 248
Handling in the power plant *832
Handling low-volatile fines. H. Bidwell 576
How pulverized coal burns as shown by the microscope. Douglas Henderson.. *116
Igniting pulverized fuel. Birder, Porter, Dias, Rainey 211
Incubator stoker or caking tipple for handling the low volatile fines. C. Pritchard 208
Is it turbulence that helps burning of pulverized coal? (Ed.) 2
Its consumers, producers and traducers (Ed.) 76
Lignite carbonization plant test in Canada 914
Moving coal cheaply from dock to car. J. R. James *636, *906
Paradox of coal prices. G. B. Gould.. 429
Saving money by intelligent coal selection *259
Stabilization program (Ed.) 380
Tempering slack coal 368
Coal. See also Pulverized coal.
Coke. See Coal.

COMBUSTION

Application of automatic combustion control. Sanderson & Ricketts..... 100
Burning low quality coal at Anheuser-Busch plant *243
CO_2 controls combustion in Anheuser-Busch plant. A. B. Stickney *204
Composite gas sampler for boiler gases. H. F. Mullikin *837
Consumption for operation of steam jets 210
Damper regulation and its effect on boiler efficiency. R. H. Parrish 648
Location of gas sampling 174
Preheating air with steam 616
Short cut estimate of excess air..... 98
Simplified automatic combustion control at Powerton Station *314
Specialist in combustion (Ed.)..... 696
Committee of Ten holds meeting 846
Compressed air re heated. C. C. Hermann.. 452
Compressors, gas — Texas-Chicago natural gas line *563

CONDENSERS

Check valve stops waste of condensing water. A. J. Dixon *207
Dry vacuum pumps and steam air ejectors — relative merits. Anderson, Hahn, Simons, Van Maarion 947
Hudson Avenue Station of Brooklyn Edison has largest surface condenser.. *549
Inverted condenser prevents subcooled condensate *404
Removing scale in condenser tubes. Dreyer, Oatley, Byrne, Richardson.... *368
Research shows effect of tube arrangement. F. A. M. Wulfinghoff *534
Tacoma plant condenser intake found defective 692
Water level in jet condenser automatically maintained. Long, Hellmer *805
Construction League formed 579

CONTROL

Application of automatic combustion control. Sanderson & Ricketts 100
Automatic combustion control at Powerton Station *314
Boiler control board for Ford vertical-compound generator at River Rouge.. *382
Continuous blowdown at Anheuser-Busch, Inc. A. B. Stickney *19
Eaton method for controlling electric steam generators to maintain pressure or power input constant (Shawinigan Chemicals, Ltd.) *458
High-pressure steam generator controlled by system which uses Thyratron vacuum-tube circuit—A.S.M.E. meeting 822
House service and fire pumps have controller in Lincoln Building. Corbalis & Devaughn *710
Manual and automatic control for synchronous motors. C. C. Nelson..... 607
McGraw-Hill building elevators controlled by pliotron tubes *632
Organ-type console controls lighting effects *364
"Piano" type keyboard to control mill drives *50
Power control cables *943
Pre-register signal system stops elevators automatically *391
Speed control for large wound-rotor motors. L. E. Markle *575
Supervisory automatic control at miniature switchboard (A.I.E.E.) 137
Supervisory control desk for Reading Company's railway electrification in Philadelphia *872

Page

Supervisory control pipe-line pumping station operation 788
Synchronous motors start and stop automatically. C. C. Nelson *457
Variable-ratio voltage control for industrial-plant transformers. Darling & Palme *891
Zoned orifice system heats McGraw-Hill building *628
Cooling towers—Forms of cooling towers. L. R. Ford *453
Largest atmospheric tower installed near Lubbock, Texas *89

CORROSION

Corrosion prevention by metal composition. W. S. Johnston 121
Hydrogen sulphide corrosion in natural gas engines. M. L. Maleev *127
Prevention by protective coatings. W. S. Johnston 155
Primary problem with air heaters and economizers *270
Rust remover 910
Tester compares metals and liquids..... *190
What it is. W. S. Johnston 87
Cost control number ..... November 24

COSTS AND PERFORMANCE

Accounting fundamentals supplied to purchased and generated power. J. W. Romig 605
California utility aids dairy business (Ed.) 187
Corning Glass Works—economical operation through records *394
Cost analysis of plants (chart) *770
Delaying needed improvements cuts down profits. Collins Wright 397
Departments pay cash for steam and electricity (Thomas A. Edison Plant)..... *188
Diesel power plants—cost of operating.. 387
Dividing load between industrial turbines *278
Dual-pressure refrigeration reduces power costs. W. R. Kitzmiller *527
Future cost of power. A. G. Christie... 908
Grand Haven Diesel plant costs. C. A. Hamilton *418
Heat—division of turbine load by the increment method. G. V. Williamson. 300
Hotel accountants and power costs (Ed.) 627
Hydro power provides revenue for irrigation works. H. A. Brown *663
Industrial boiler plant design. H. Bleibtreu *493
Maintenance methods that reduce hydro plant operating costs. J. E. Housley (Tallassee Power Co.) *124
Modern diesel equipment reduces power cost at Winterset, Iowa. C. F. Lambert *4
Obtaining boiler efficiency by heat balance 101
Operating methods that save heating steam *290
Power cost control applied to an industrial plant (chart) *766
Power dollar (Ed.) 730
Power services rationalized (Ed.) 662
Records turn meter readings into profits. *975
Short sighted policy (Ed.) 148
W. & J. Sloane know their power costs. *538
Specifications for selecting pumping equipment. R. H. Parrish 389
System by which one engineering department handles its projects *360
Systemized power management saves dollars in industrial plant. J. C. Evans.. *903
Utilization of salvaged apparatus..... 173

D

Dams. See Water power.
Designers and operators should co-operate more (Ed.) 77
Designers and operators should co-operate. Wallace Whitlock 432
Diagrams used for checking oil engine operation. P. H. Schweitzer *158
Diesel engines. See Engines, internal combustion.
Diphenyl-oxide—Installation for preheating air—A.S.M.E. meeting 437
Drive, selecting roller chain to suit the. W. A. Warrick *196
Dust elimination. See Smoke abatement.

E

Economizers—Corrosion: primary problem with air heaters and economizers..... *270
Operation of fan when economizers are installed. Willis, Goss, Hill, Parry, Cramer 332
Edison, Thomas Alva—obituary *620
ELECTRICITY

Akron airship switchboard *669
Ammeters readings do not check..... 368
Carbon circuit breaker has normal rating of 48,000 amp. *19
Care of renewal parts for electrical equipment 635

(*) Illustrated. (Ed.) Editorial.

Page

Conductors for heavy alternating currents. Bohn & Papst *171
Deion and Deion-grid circuit breakers. H. N. Blackmon *161
Delta-connected banks of transformers in parallel *875
Eaton method for controlling electric steam generators to maintain pressure or power input constant (Shawinigan Chemicals, Ltd.) *458
Electric steam generators (Ed.) 380
Elevators in McGraw-Hill building controlled by pliotron tubes *632
England changing to alternating current 461
Factory testing of metal inclosed switchgear *160
Faraday, Michael — celebrations commemorating electromagnetic induction. *415
Fuse performance in circuit interrupting service. H. D. Braley *130
Fuse performance in relay service. H. D. Braley *200
Ground connection—don't neglect (Ed.). 448
Ground connections—testing 651
Heating by electricity (Ed.) 381
Heating and cooling Los Angeles Edison building by electricity. H. L. Doolittle *348
Hongkong electric supply system expanding. Walter Buchler *610
Largest transformer for Hell Gate *657
Light circuit disturbed by hoist motor. Olive, Elliott, Willett, Miller, Ely 617
Lighting effects controlled by organ-type console *364
Maintenance schedule for reliable operation. Marin Phillips 356
Measuring temperatures in rotating machinery. H. E. Pearson *324
Megohm meters. Emerson, Spring, Cilley, Leech-Porter, Hoffman 98
Megohm meter used for insulation tests. B. W. Hamilton 367
Mercury arc rectifiers applied to industrial loads. W. E. Gutzwiller *44
New control cables have improved characteristics. H. M. Friend *666
1931 electrical code approved by A.S.A. 442
One compensator starts two induction motors. R. H. Baker *944
One compensator starts two induction motors. Ellis Mills *501
Panel for testing and battery charging. *802
Photo electric tube automatically regulates street lights 160
Practices that improve the operation of electrical equipment *282
Pre-register signal system stops elevators automatically *391
Quick-response excitation for alternating-current machines. C. Lynn *498
Reducing power consumption of magnetic contactor coil. R. B. Glen 715
Reducing power consumptoin of magnetic contactor coils. T. E. Miller 136
Repairing loose bars in squirrel-cage rotors. Maxwell, Bradley *330
Revamping old converters improves operation. R. H. Newton *831
Saving possible with dual pump drive. H. M. Spring *897
Static removed from belts. Christfield, Rosenberg, Simpson, Conroy, Sachs, Warden, Nichols 473
Supervisory automatic control at miniature switchboard (A.I.E.E.) 137
Supervisory control desk for Reading Company's railway electrification in Philadelphia *872
Switch houses designed for exterior operation. F. E. Jaquay *126
Switchboard for power station finished in green *789
Synchronous condenser, largest ever sold, for Commonwealth Edison of Chicago 515
Synchronous motors—emergency full-voltage starting. C. C. Nelson 399
Testing the revolving field of turbine-generator for Hudson Avenue station of Brooklyn Edison *773
Thermal cutouts for protecting alternating-current motors. H. D. Braley *703
Transformer bank changed to delta-delta connection *60
Transformer, cause of overheating 425
Transformers, largest ever built, for Commonwealth Edison Co. 218
Transformers, lightning proof *811
Transmission line to extend from Bagnell Dam to substation in St. Louis 516
Variable-ratio voltage control for industrial-plant transformers. Darling & Palme *894

ELEVATORS

Chicago post office to have 45 elevators .. 373
Cities Service building has double-deck elevators *856
Equalizing the load on elevator ropes. W. P. Frost 684
Hangar for Akron has elevators run on curved rail guide rails *713
How hoistway door operation affects elevator service. H. B. Cook 608
Hydraulic elevator speed 804
La Cerda elevator tower transports city population in Bahia, Brazil *952
Life of elevator ropes (Ed.) 626
New national safety code approved by American Standards Assn. 340
Operation in modern buildings *285
Pliotron tubes level elevators in McGraw-Hill building *632

Page

Pre-register signal system stops elevator automatically *391
Responsibility for elevator accidents (Ed.) 884
Russia standardizes elevator specifications. R. P. Valtier 323
Safety the criterion (Ed.) 346
Unequal loading decreases elevator rope life. A. S. Rairden *683
Employees—Give an ear to the operating man (Ed.) 148
Engine, water-expansion *334

ENGINEERING EDUCATION

Challenge to engineers. P. Dias 58
Establish fellowship for boiler feedwater study 142
Merit system discarded by N.A.P.E. 414
Merit system discontinued by Power Engineers 438
Misapplication of engineering terms. J. O. G. Gibbons 97
Modern operation offers broad opportunities (Ed.) 258
Practical man vs. the theorist. Orville Adams 838
Standard test system adopted by State Engineering Examiners 548
Theory and practice (Ed.) 484
Will they go back to teaching? (Ed.) ... 186
Writing in. A. C. McHugh 96
Engineering Foundation — defending engineering (Ed.) 40

ENGINEERS

Co-ordination needed (Ed.) 556
Engineering profession has no apologies (Ed.) 778
Engineers as inventors. C. M. Durgin 715
How many engineers are now unemployed? H. M. Friend *600
How many engineers are now unemployed? A. H. Myers 839
How poor is the engineer? (Ed.) 312
Keeping the engineer employed. H. M. Friend 835
Metropolitan engineers organize relief unit 724
Operating—a real vocation (Ed.) 778
Relief Fund started 880
Rutgers enlarges research program to aid unemployed 951
Unemployment relief committee for engineers 691
What do engineers earn? 318

ENGINES—INTERNAL COMBUSTION

Advantages of offset diagrams in checking oil engine operation. P. H. Schweitzer *158
Burning cheaper oil in Diesel engines (Ed.) 816
Chart for cost control for Diesel plant .. *748
Combustion chambers of American high speed Diesels. E. J. Kates *92
Cooling small Diesel engines. L. R. Ford. *453
Diesel-ammonia compressor unit installed at Long Beach ice plant *560
Diesel as an auxiliary to central power systems. O. F. Allen *670
Diesel-electric marine drive — A.S.M.E. meeting 824
Diesel engines as peak load units. S. A. Hadley 578
Diesel engines at Grand Haven plant. C. A. Hamilton *418
Diesel engines, burning oil in 508
Diesel engine—marine power plants. O. F. Allen *522
Diesels for railcar service. O. F. Allen .. *864
Diesel fuel-injection principles. Robertson Matthews 907
Diesel fuel-injection principles wrong?.. 802
Diesel locomotive solves railroad problems. O. F. Allen *928
Diesel piston trouble solved by rearranged cooling system. T. C. Hulton *22
Diesel power plants—cost of operating .. 387
Diesel stand-by power in Kearney plant of Central Power Co. Edward Swan *708
Dredge power supplied by Diesels *905
Excessive crankcase lubrication of an oil engine 840
Filtering Diesel lubricating oil. L. R. Baker 503
Filtering Diesel lubricating oil. J. W. Peterson *401
Flour mill to have Diesel plant (Commander Milling Co.) 878
Frames of Diesel engines welded *405
Hand-scraping of oil engine bearings. Donald Raeburn 246, 168
Heavy oil in solid-injection Diesels. T. C. Hulton 59
Hydrogen sulphide corrosion in natural gas engines. V. L. Maleev *127
Indicator reducing motion for internal combustion engines *242
Know the oil engine better (Ed.) 41
Large Diesel engines (Ed.) 590
Large oil engine for central station service. O. F. Allen *596
Long exhaust line on two cycle engine causes trouble. W. F. Dingwall 57
Marine, world's largest *409
Modern Diesel equipment reduces power cost at Winterset, Iowa. C. F. Lambert *4
Navy's attitude toward American Diesels. L. H. Morrison *14
Navy's attitude toward American Diesels. Donald Raeburn 472
Oil engine operation depends upon the governor. H. F. Shepherd *287
Oil engines—why so much excess air for? Robertson Matthews 612

Page

Oil and Gas Power Division of A.S.M.E. feature Diesel at meeting *7
Pipe line engines burn butane. G. L. Lindsay *354
Repair on Diesel engine cylinder. W. W. Dingwall 567
Scavenging limitations of high speed two cycle Diesels. J. W. Anderson .. 205
Setting valves of large gas engines. R. C. Laney *490
Significant step in Diesel development (Ed.) 186
Stabilizing an engine foundation. A. J. Dixon *135
Sulzer Brothers build 10,800 hp. Diesel. O. F. Allen *786
Sulzer Brothers double acting Diesel *241
Supercharging is one answer. J. W. Meyer *576
Test corrections (Ed.) 76
Test floor has 15,000 hp. of Diesels *691
United States Navy Diesel requirements—A.S.M.E. meeting 824
Volumetric efficiency of an oil engine .. 473
We need advanced Diesel development (Ed.) 2
Why so much excess air for oil engines? E. A. Richardson 803

ENGINES—STEAM

Chart for cost control of engine or turbine plant *748
Crankshaft cracks 580
Fitting Corliss valves. Donald Raeburn .. 432
Lead with eccentric change 350
Noise of Corliss engines with light loads 138
Quality corrections in engine performance 173
Regulating device for Corliss-engine dashpots. D. J. Altizer *838
Size of a receiver of a compound steam engine 840
Size of steam line 138
Stabilizing an engine foundation. A. J. Dixon *135
Steam cylinder lubrication of modern high-pressure engines. A. F. Brewer .. *564
Test corrections (Ed.) 76

EQUIPMENT—NEW

Air cleaner, oil-type *476
Air compressors, ball-bearing vertical ... *912
Air compressor, two-stage vertical *912
Ash hopper with auxiliary feeder rolls. *475
Bearing, double-sealed ball *406
Bearing, improved roller clutch *178
Bearings, roller *475, *513
Belt, link-wedge *179
Belt conveyor idler *66
Belt trainer for return strand of belt conveyors *619
Boiler, low head bent-tube *33
Boiler, multiple circulation *689
Brake lining *688
Brazing alloy has low melting point 547
Burette, self-leveling *655
Chain, silent, of ½ in. pitch *912
Chlorine comparator *654
Circuit breaker, oil *407
Clamps, fuse clip *688
Clamp, steel and expansion washer for electrical connections *688
Clamps, test 513
Clutch, friction *67
Commutator and slip ring grinder *215
Coal burner, self-contained *619
Coal handling from dock to car. J. R. James *636
Coal spreader and gasifier *32
Coating, protective 547
Combustion indicator *913
Contactors, normally closed and up-and-down *513
Controller, differential limit *441
Controllers, pneumatic cycle *178
Cooling tower, spray-type *913
Coupling, flexible of ball and socket design *688
Coupling, vertical pump *407
Cutting apparatus, oxy-acetylene *371
Diesel, two-cycle convertible *105
Draft gages, tandem system, for zoned air flow control *106
Dry-quenching unit, steam-generating ... *371
Electrode for mild steel 809
Electrode, manganese 406
Elevator car gate has electric operator. *722
Engines, stationary-type Diesel *370
Evaporator, refrigeration *546
Extractor for broken screws and studs .. *105
Fan, multi-blade for indirect-connected fan *843
Fan wheels in seven diameters and four widths *215
Feed water control valve regulates water input by steam flow and water level .. *876
Firebrick, insulating, for boiler and industrial furnaces 179
Gage, all-steel *655
Gage, flat glass water *406
Gage, liquid-level *475
Gage, multi-contact-making pressure *546
Gage protector and non pulsator *178
Gasket, manhole *582
Gear unit for increasing or reducing speed *842
Gears, welded steel *477
Generator, standardized steam *370
Goggles, welding *251
Graphic instrument, flush-type *722
Grease gun, pressure, to lubricated elevator guide rails *842
Growlers for testing electrical equipment. *251
Heating unit for large areas *809
Hoist, electric, for minimum headroom .. *214

(*) Illustrated. (Ed.) Editorial.

Page

Hoist, electric trolley *547
Hoist, improved screw *689
Hydraulic transmission unit, variable-speed *250
Hydro vacuum unit for soot, siftings and other materials *140
Indicator, smoke density *338
Indicator, wire cable tension *808
Insulation support 913
Joint, gasket-type expansion *912
Lubricants for gears 583
Lubricator, glass bottle type *913
Meter, combination flow *179
Meter, electrically operated orifice *949
Meter, ratio, for gas- and oil-fired furnaces *370
Meter, watt-hour *513
Mixing equipment to eliminate fly ash dust *105
Motors, direct-current *722
Motor, electric vapor *406
Motor, explosion proof *32
Motor, fully inclosed fan-cooled *251
Motor, totally inclosed fan-cooled *655
Motors, vertical *513
Motor control system *477
Motor starter, across-the-line *809
Oiler, automatic multiple, with gravity feed *104
Packing and gasket material, plastic *33
Packing in coil form 178
Paint, protective, for pipe lines 688
Panelboard, shallow-safety *407
Pilot controller *250
Pipe fittings for welding *66
Pipe machine, portable *546
Pipe machine with rotary die head *619
Power pipe machine *808
Pressure control instrument *689
Pressure snubber 808
Promal for industrial castings 655
Pulley, motor *476
Pulsation dampener, gage *582
Pulverizer, coal *339
Pulverizer, unit *512
Pump, abrasive-materials handling *476
Pump, centrifugal, for liquids carrying solids *214
Pump, centrifugal unit *371
Pumps, high speed spiral *104
Pumps, improved line of steam *251
Pyrometer, improved potentiometer *140
Pyrometer, potentiometer *476
Recorder, operation *583
Recorder for condenser leakage *949
Recorder controller, air-operated *618
Rectifier, steel tank mercury arc *141
Relay, directional distance *723
Relay, photo-electric lighting control *688
Separator, water and oil *547
Separator for pulverized coal *583
Sheaves, pressed-steel *477
Silencer for air-compressors and blowers *67
Smoke indicator *105
Specific gravity recorder *618
Speed reducer *406
Speed reducer, motorized *67
Speed reducer, vertical sp ral bevel *215
Speed reducer with rolled steel housings *441
Spray gun with adjustable nozzle *877
Starter, explosion-proof *547
Starter, float-operated motor *583
Starter for fire pump service *723
Starter, manual across-the-line *407
Starter, reversing, for small motors *440
Starter, splashproof, for squirrel-cage *440
Steam purifier employs series of Venturi shaped nozzles *877
Steam trap, thermostatic *339
Steam trap with spherical body and float *104
Stoker, multiple-retort underfeed *948
Stoker, small underfeed hydraulically driven *33
Stoker, unit-type underfeed *477
Stoker drive, electric *843
Stop, "No-water" for centrifugal pump *654
Stuffing box, ball bearing *214
Switch, safety *440
Switch, transfer, for two-speed fan motors *512
Switchboard, dead front steel inclosed *140
Switchboard, desk type *582
Switchgear, metal-clad *654
Switchgear, metal-clad *723
Switchgear, pedestal-mounted metal-clad *370
Televisor, water level *338
Testing instrument for calcium chloride brine *66
Thermometer, recording, gives true bulb temperature *877
Thermometer, snap-case-front *32
Threader, portable pipe *842
Time controller *582
Transformer for general purpose testing *106
Transmission, vertical with pivoting motor base *723
Unloader, duplex car *215
Valve, balanced hydraulic relief *214
Valve, ball thrust bearing gate *67
Valves, forged-steel *843
Valves, gate, with lubricant seal *808
Valve, lever-operated *141
Valves, radiator *843
Valve, seatless *440
Valve, solenoid-operated *441
Valves, steel needle, for high pressure *809
Valve, turbine bleeder non-return *512
Vise post, portable *440
Water circulator, propeller-type *106
Water-cooling tower *689
Water-heating element, submerged type *179
Water level control for low pressure boilers *250
Welder, arc, with single adjustment *67
Welder, constant potential multiple arc *141
Welding elbows of wrought iron *215
Welding fittings *655
Welding set *441
Welding set, single-operator *546
Welding stubs, loose-flange *338
Welding torch and cutting attachment *546

EVAPORATORS

Flooded-ammonia evaporator. R. F. Sorrells *389
Handling closed heaters, evaporators and feed regulators *268
Hot-process softener compared with evaporator. J. D. Yoder 496
Improving the evaporator for industrial use. R. J. Gaudy *164

F

FANS

Influence of inlet box on fan performance —A.S.M.E. meeting 821
High speed forced draft fan welded. G. G. Landis *90
Protection of shafts against corrosion 402
Faraday, Michael—celebrations commemorating electromagnetic induction *415

FEDERAL POWER COMMISSION

Appointment legal (Ed.) 850
Inaugurates survey of operating company control 68
"Interconnected" regulatory bodies urged in annual report 844
Smith's appointment upheld by District Court 878
Starts study of holding companies 213

FEED WATER

Boiler feedwater studies started by Joint Research Committee 725
Compression of liquid water. R. C. H. Heck *422
Conditioning boiler water. L. R. Baker 873
Conservation of heat in blowdown 874
Deconcentrator vs. continuous blowdown 720
Expansion in boiler-feed piping may cause trouble. H. M. Spring *857
Foaming and priming of boiler water—A.S.M.E. meeting 829
Irregular condensate returns. A. R. Markland 839
Maintaining proper feed-water conditions. J. B. Swift 472
Once-through series boiler — A.S.M.E. meeting 823
Progress report on boiler feed-water studies—A.S.M.E. meeting 830
Rise of pressure in boiler-feed line. Veenschoten, Merrell 366
SO_4—CO_3 ratio for prevention of boiler scale—A.S.M.E. meeting 829
Solubility of calcium salts in boiler water—A.S.M.E. meeting 820
Staging feed water heating 910
Treating high-pressure boiler feed (Ed.) 850
Feed water treatment. See also Water treatment.
Fits, expansion, with liquid air. David & Farr 506
Fluxing of ashes and slags—A.S.M.E. meeting 828
Fly ash. See Ash handling.

FOREWORD—E. C. HUTCHINSON

Better relations 695
Business is business 413
Business recovery and unemployment 777
Buyer and seller relations 379
Confidential information 447
Engineer's competition 625
Fair play 919
Fictitious price bait 661
Killing the goose 815
Lessons of the depression 729
Power executives' responsibility 345
Pre-order acceptability 849
Purchaser's self-justification 483
Purchasing ethics 519
This page 311

FOREWORD—F. R. LOW

Analysis or intuition? 113
Appreciation 555
Boiler makers become steam plant builders 147
Thomas A. Edison 589
Merry Christmas 883
Orderly use of time 223
Pursuit of happiness 75
Repeat orders 1
Shopping 185
Stringency 40
Valedictory 257
Freezing temperature at high altitudes 720

FUELS

British fuel problems discussed in London 584
Burning cheaper oil in Diesel engines (Ed.) 816
Burning fuel oil . R. H. Parrish 702
Butane burned by pipe line engines. G. L. Lindsay *354
Cleaning fuel-oil storage tanks 599
Developing a furnace to burn anthracite buckwheat *137
Heat values of fuels discussed at American Chemical Society meeting 373
Method of feeding wood refuse 574
Modern boiler equipment broadens choice of fuels (Ed.) 148
New York plant to use natural gas and water power 443
1929 expenditure for fuels 775
Paddy husk used as fuel in Siam power station. Walter Buchler *129
Pulverized cracking still coke and absorber gas as boiler fuel (Toledo Refinery of Standard Oil Co.) *150
Reducing moisture in fuel oil *537
Saving with fuel oil 720
Watch the local fuel market (Ed.) 627
Fuel. See also Coal.
Furnaces. See Boilers.

G

GAGES

Boiler gage glass readings are misleading. Grant Campbell *925
Gage glass readings may belie true water level. E. H. Krieg *48
Precision water level gage. E. M. Tingley *331
Setting steam gages 650

GAS AND GASES

Accelerating time of free discharge *302
Burning gas in Diesel engines 508
Composite gas sampler for boiler gases. H. F. Mullikin *837
800-mile gas line in operation 252
Flue gas—removing objectionable products from *404
Furnace volume for gas burning 874
Helium—specific heat ratio 946
Location of gas sampling tube 174
Missouri attempts to regulate gas pipe lines 253
Natural gas burned under new 1,400 lb. boilers at Deepwater, Texas. J. B. Nealey (Houston Light & Power Co.) . *78
New Hampshire has first high pressure gas line 341
Non-condensable gas in the refrigerating plant. Leon Buehler, Jr. *891
Solid CO_2 plant to be erected using stack gases in San Francisco 725
Texas-Chicago natural gas pipe line *478, *563
250-mile natural gas line completed in Montana 480
213-mile gas line completed for Long Beach station 810
Two plants at California and Arizona remodeled to burn gas 143
United States uses 95% of natural gas. 579
Why not use the mol and pound-mol? (Ed.) 347

GENERATORS

Electric steam generator used in research department *229
Quick-response excitation for alternating-current machines. C. Lynn *498
Umbrella-type generators reduce hydro plant costs. H. B. Crandall *358
Governors—Difference in governors 686
Oil engine operation depends upon the governor. H. F. Shepherd *287
Grand Council of the Universal Craftsmen Council of Engineers—Annual convention 252
Guarantees, fewer and better (Ed.) 225

H

HEAT

Compression of liquid water. R. C. H. Heck *422
Condenser research shows effect of tube arrangement. F. A. M. Wulfinghoff *534
Conservation of energy 946
Diphenyl-oxide installation for preheating air—A.S.M.E. meeting 437
Division of turbine load by the increment method. G. V. Williamson 300
Heat content of steam 508
Heat values of fuels discussed at American Chemical Society meeting 373
Why high-pressure steam has low total heat. R. F. Sorrells 572

HEAT BALANCE

"Don't waste exhaust steam" is the whole story of heat balance *280
Heat balance of an ice plant. M. F. Knoy *192
Obtaining boiler efficiency by heat balance 101

HEATERS

Air heaters and their maintenance. L. C. Whiton, Jr. *936
Handling closed heaetrs, evaporators and feed regulators *268
Remedying troublesome feedwater heater. A. J. Dixon *300
Steam driven vacuum pumps in conjunction with feedwater heaters. Spring, Jones, Ulrich, Knoy, Finch, Sheehan, Hoffman 544
Steam heater for exposed water tanks. W. A. Cooil *366

(*) Illustrated. (Ed.) Editorial.

Page

HEATING AND VENTILATING
Capacity of unit consisting of turbine at 200 lb. pressure and condenser. Dreyer, Martin, Shank, Maynz 402
Changes in theater heating save fuel and power. A. F. Sheehan *123
Chart for cost control of water-heating plant *756
Effect of turbulence in steam radiators. C. P. Benneche *169
Electricity used for heating (Ed.) 381
Electricity used to heat and cool Los Angeles Edison building. H. L. Doolittle *348
Excessively hot water 616
Fan and unit heater sales 109
Flow of steam through orifice into heating system radiators. Sanford & Sprenger *102
Heating with exhaust steam.....28, 332
High speed forced draft fan welded. G. G. Landis *90
Hot water and cold air from a refrigerating system. B. F. Randel 400
Influence of inlet box on fan performance —A.S.M.E. meeting 821
Ionization may alter ventilating methods (Ed.) 590
Operating methods that save heating steam *290
Irregular condensate returns. A. R. Markland 839
Operating heating system 910
Providing for free flow of air in heating return lines. J. H. Keller.....*136
Steam driven vacuum pumps in conjunction with feedwater heaters. Spring, Jones, Ulrich, Knoy, Finch, Sheehan, Hoffman 544
Steam velocity in heating systems..... 804
Temperature in radiator 402
Unit heaters prove economical in large single area building. W. R. Loveless (Western Electric Co.) *51
Washington still undecided about central heating plant 915
Zoned orifice system heats McGraw-Hill building *628

HIGH PRESSURES AND TEMPERATURE
A.S.M.E. and A.S.T.M. seek better metals for high temperatures 25
Detroit Edison has completed its high-temperature installation. R. M. Van Duzer, Jr. *591
High temperature characteristics revealed by bending 425
Marine critical-pressure boiler and high pressure turbine *870
Measuring temperatures in rotating machinery. H. E. Pearson *324
Operation of high pressure boilers. W. F. Ryan *261
Purdue high-pressure boiler. Potter, Hawkins & Solberg *798
St. Denis high-pressure steam power station. R. H. Andrews *921
Solubility of calcium salts in boiler water—A.S.M.E. meeting 820
Tube failures in 1,400 lb. boilers (Mannheim boilers) *542
Use of steam calorimeter for high pressures 840
Yarnall-Waring 2,500 lb. boiler. D. R. Yarnall *801
Hoists—Coal handling in the power plant.*832
Hotel accountants and power costs (Ed.). 627
Hydro electric plants. See Power plants, and Water power.

I

INDUSTRY
Challenge of facts (Ed.) 521
Chamber of Commerce has plan to help business 951
Swope plan for stabilization (Ed.)..... 414
Swope plan to stabilize industry..... 439

INSPECTION AND MAINTENANCE
Boiler flooded by improper feeder connection. J. D. Arnester.....*677
Boiler testing for leaks..... 473
Calking leaky pipe threads 645
Care of plant piping 277
Care of renewal parts for electrical equipment 635
Care of rotary-type mechanical oil burners. H. M. Spring 134
Centrifugal pumps—selection and operation. Marin Phillips *861
Cleaning fuel-oil storage tanks 599
Cleaning scale from cylinder jackets of Diesel engine 174
Compressed air used to clear blowdown line *863
Condensate receiver made from discarded boiler drum. J. E. Noble *301
Conveniences in the power plant make for efficiency. D. J. Altizer 23
Copper wire for cylinder head gasket. C. L. Overly *95
Customer inspecting. A. H. Myers.... 503
Customer inspection of plant equipment necessary? H. M. Friend 321, S. Rosenberg 648
Design of reinforcing plate for cracked stuffing box gland. W. H. Moore.....*246
Diesel engine cylinder repair. W. W. Dingwall 567

Page
Draining industrial equipment *867
Gate valve with broken stem opened under pressure. A. Pullekins..... 638
How frequently should inspections be made? Marin Phillips 611
Improving contact of engine bed with foundation. A. J. Dixon *168
Improving maintenance methods. William Anderson 612
Long exhaust line on two-cycle engine causes trouble. W. F. Dingwall... 57
Lubrication and maintenance of roller chain drives. W. A. Warrick.....*235
Maintaining equipment in hydro-electric plants. J. E. Housley 239
Maintenance methods that reduce hydro plant operating costs. J. E. Housley (Tallassee Power Co.) *124
Motor-installation rules simplify maintenance. Marin Phillips 430
Needle valve repaired 492
Operating methods (Ed.) 381
Organizing hydro-electric inspection and maintenance. J. E. Housley..... *54
Performance of modern steam-generating units—A.S.M.E. meeting 820
Plant housekeeping (Ed.) 347
Pressure vessel inspector's job. E. R. Fish 328
Proper adjustment of crankpin box. Wm. Pittman *134
Pulverizer parts maintenance. M. C. Carver 893
Regulating device for Corliss-engine dashpots. D. J. Altizer *838
Remedying troublesome feed-water heater. A. J. Dixon *300
Removing oil from kiln piping 840
Repairing loose bars in squirrel-cage rotors. Maxwell, Bradley *330
Repairs to outside packed plunger pump. C. H. Paeplon *300
Revamping old converters improves operation. R. H. Newton *831
Scale removed from condenser tubes. Dreyer, Oatley, Byrne, Richardson....*368
Scheduling maintenance work for reliable operation. Marin Phillips 356
Setting valves of large gas engines. R. C. Laney *490
Soot blower operation at Mad River (Ohio Edison Co.). J. W. Mikels.....*940
Tapping a steam main under pressure. J. T. Towlson *301
Trapping leakage through cylinder stuffing box. D. J. Allison..... *96
Turbine inspection (Ed.) 920
Instruments—Outfit for thermometer calibration. J. R. Connelly *230

INSULATION
Diatomaceous earth insulation 686
Durability of heat insulation..... 302
Megohm meter used for insulation tests. B. W. Hamilton 367
Steam trap capacity for handling condensate drainage. Constable, Warden, Ulrich, Rassmussen, Byrne 248
Insulation, electrical. See Electricity.
International Acetylene Assn. — Welding tests featured at convention.....*774
Invention—engineers as inventors (Ed.)... 313
Robertson Matthews 472
Irrigation pumping equipment. R. H. Parrish 389
Hydro power provides revenue for irrigation works. H. A. Brown.....*663

L

LABOR
Doherty fund may not be given..... 585
Employee advancement by stepped wages or stepped jobs. William Anderson 22, Donald Raeburn 331
How many engineers are now unemployed? H. M. Friend *600
Industry's responsibiltiy to the stable worker (Ed.) 520
Local co-operation on employment (Ed.) 626
National Industrial Conference Board surveys dismissal wage 404
N. J. engineers start public works program to aid idle 845
Public works program to aid unemployed 724
Spending wisely to aid employment (Ed.) 448
Swope plan to stabilize employment.... 439
Unemployed classified into three general groups (Ed.) 884
What do engineers earn? 318
Liquid air as a medium for making expansion fits. David & Farr 506
Locomotives—Canadian Pacific's first locomotive 180
Diesel locomotive solves railroad problems. O. F. Allen *928

LUBRICATION
Bearing lubrication—A.S.M.E. meeting.. 830
Cutting in oil cooler shuts down turbine. George Rosentreter *390
Dewaxing lubricating oils 686
Effect of oil in exhaust steam..... 336
Eliminating oil drip on a revolution counter. B. F. Powell *96
Excessive crankcase lubrication of an oil engine 840
Filtering Diesel lubricating oil. L. R. Baker 503
Filtering Diesel lubricating oil. J. W. Peterson *401

Page
Maintenance and lubrication of roller chain drives. W. A. Warrick *235
Oil cleaned by pressure filtration. W. H. Martin *646
Oxidation of lubricating oil (Ed.)..... 40
Removing oil from kiln piping..... 840
Steam cylinder lubrication of modern high-pressure engines. A. F. Brewer..*564
Synthetic lubricating oils..... 103
Tests on lubricants for turbine and engine service. F. L. Gray 64
Too much lubrication (Ed.) 920
Water added to oil before cleaning. Hulton, Baker, Knoy, Graham, Dingwall. 29

M

MARINE
Critical-pressure boiler *870
Diesel-electric marine drive — A.S.M.E. meeting 824
Largest Diesel-driven river towboat completed 340
Marine condensing unit *206
Marine power plants. O. F. Allen.....*522
Oil and steam in marine engineering—British Assn. 577
Marine turbine would carry only half load. J. S. Isdale 207
Navy's attitude toward American Diesels. Donald Raeburn 472
United States Navy Diesel requirements—A.S.M.E. meeting 824
Materials Handling Institute—formed..... 951
McGraw-Hill building—elevators controlled by pliotron tubes *632
Heated by zoned orifice system *628

MERCURY
Mercury arc rectifiers applied to industrial loads. W. E. Gutzwiller..... *44
Mercury vapor for process plants (Ed.). 556
Outdoor mercury-vapor plant of General Electric at Schenectady *621
Metals—A.S.M.E. and A.S.T.M. seek better metals for high temperatures 25
High temperature characteristics revealed by bending 425

METERS
Fluid meters—A.S.M.E. meeting 825
Liquid temperature indicator 804
Megohm, used for insulation tests. B. W. Hamilton 367
Records turn meter readings into profit..*275

MOTORS
Automatic unloading of synchronous motors. C. C. Nelson 244
Centralized motor control (Ed.)..... 484
Connecting two motors to drive the same load. R. E. MacKay 329
Flywheels for motor application (Ed.).. 662
Induction motors for frequent reversing.. 637
Installation rules simplify maintenance. Marin Phillips 430
Loose rotor bars. Stilwell, Wyatt, Dunlap, Brodie, Sheehan, Nutter, Rhodes 302
Manual and automatic control for synchronous motors. C. C. Nelson..... 607
Motor applications for drives requiring speed changes. E. C. Dieffenbach.... *80
One compensator starts two induction motors. R. H. Baker *944
One compensator starts two induction motors. Ellis Mills *501
Opening the rotor circuits of a phase-wound motor 616
Reconnecting an induction motor..... 248
Speed control for large wound-rotor motors. L. E. Markle *575
Synchronous-motor drive for municipal pumps. A. E. Beardmore *530
Synchronous-motor-driven pump equipped with unloader *644
Synchronous motors—emergency full-voltage starting. C. C. Nelson..... 399
Synchronous motors on power house auxiliaries (Ed.) 225
Synchronous motors start and stop automatically. C. C. Nelson *457
Synchronous motors totally inclosed cooled by fans. C. C. Shutt *396
Thermal cutouts for protecting alternating-current motors. H. D. Braley.*703
Waterwheels and motors drive pulp-mill grinders (Abitibi Power & Paper Co.). A. T. Hurter *796

MUSCLE SHOALS
Commission recommends leasing property for fertilizer production 810
Commission evolves new plan 549
Joint board appointed to prepare plan.. 109
Seek sale without Congress approval.... 478

N

National Assn. of Manufacturers—annual meeting 658
National Association of Power Engineers—Educational work. L. A. Pierson... 803
Merit system discarded (Ed.) 414
Merit system discontinued 438
National Conference Board—Analyzes competitive status of coal 879
National Electric Light Assn.—Hydro Committee discusses plant economy..... 657
National Safety Council—Annual congress. 478
Natural gas. See Gas and gases.

(*) Illustrated. (Ed.) Editorial.

Page

O

OBITUARIES
Crane, Richard T. *726
Cullen, Charles 36
Davis, Harry Philips 410
Dickinson, S. E. 444
Fraser, Donald 880
Gaylord, Truman P. 110
Gilbert, E. Fenton 374
Hall, Willis Edward 182
Hawle, Edgar R. 516
Hawley, Watson 182
Heisler, Charles L. 586
Lewis, Warren B. 254
Lippincott, A. C. 480
Martin, F. H. 952
Matheson, K. G. 846
McCausland, Wallace 444
McClave, William 144
Nankivell, Francis J. 70
Neisz, Homer E. 254
Quinn, A. D. 480
Robinson, L. T. 692
Sayers, A. J. 622
Simmons, Edward A. 516
Sly, George Eugene 70
Starr, J. E. 36
Stratton, Dr. Samuel W. *622
Swain, George Fillmore 70
Wickes, H. T. *846
Wiley, Andrew J. 586
Williams, G. S. 916

OIL BURNERS
Carbon deposit on burner tip 687
Explosions from flooded oil furnaces. William Anderson 649
Need safety shut-off valve 399
Sales for first half of 1930 and 1931 216
Yellow oil flame 544
Oil producers try co-operative selling 35
Oxygen used for testing for leaks 356

P

Photo-electric tube. See Electricity.
Piezometer investigations—A.S.M.E. meeting 828

PIPING
A.S.A. adopts formula for pipe wall thickness 69
Butane burned by pipe line engines. G. L. Lindsay *354
Calking leaky pipe threads 645
Care of plant piping 277
Chart for determining thickness of pipe. C. V. Jenkinson *673
Creased vs. plain bends (Ed.) 556
Draining high-pressure steam mains *674
Expansion in boiler-feed piping may cause trouble. H. M. Spring *857
Flexibility of plain and creased pipe bends. P. M. Gallo *906
Flexibility of plain and creased pipe bends. Houser & Hirschberg *568
Flow of water in pipe 687
How faulty water circulation was improved. M. Busillo *682
How faulty water circulation was improved. V. J. Cucci 365
How faulty water circulation was improved. L. W. Ross *24
Improved design of pipe line hanger increases stability. C. W. Willey *97
Pipe line as a reducing valve 804
Pipe welding and test features at convention of International Acetylene Assn.. *771
Standards approved by A.S.T.M. 515
Steam drip system (Ed.) 662
Supervisory control pipe-line pumping station operation 788
Tapping a steam main under pressure. J. T. Towlson *301
Venting drain pipe seal. John Thorn *367
Welded pipe and fittings in heating installations—A.W.S. meeting 505
Welded piping for high temperature lines (Ed.) 3
"Power"—historical summary 34
New home *586

POWER
Accounting fundamentals applied to purchased and generated power. J. W. Romig 605
California utility aids dairy business (Ed.) 187
Does the purchase of power save fuel? (Ed.) 521
Future cost of power. A. G. Christie.. 908
Grand Lake station, New Brunswick—new steam plant to correct power factor. E. G. Wilson *557
Idaho power tax is declared constitutional 340
Interstate export of power (Ed.) 149
Interstate power regulation (Ed.) 920
New home of Power heated by zoned orifice system *628
Paris refuse incinerator generates by-product power. Jules Colon 55
Power-cost trio (Ed.) 520
Power problem of the smaller plant. E. C. Hutchinson 212
W. & J. Sloane know their power costs .. *538
Power plant auxiliaries — Steam driven auxiliaries (Ed.) 628

Page

POWER PLANT MANAGEMENT
Conveniences in the power plant make for efficiency. D. J. Altizer 23
Corning Glass Works—economical operation through records *394
Delaying needed improvemnts cuts down profits. Collins Wright 397
Maintenance schedule for reliable operation. Marin Phillips 356
Systemized power management saves dollars in industrial plant. J. C. Evans *903
Power plant operated with natural gas, steam and water power (Keuka Lake, N. Y.) 443

POWER PLANTS—STEAM
Anheuser-Busch plant—CO_2 controls combustion. A. B. Stickney *204
Atkinson plant near Atlanta operating at capacity 657
Benson steam generator at Langerbrugge, Belgium 927
Corning Glass Works—economical operation through records *394
Detroit Edison completes its high-temperature installation. R. M. Van Duzer, Jr. *591
Diablo plant of Seattle *540
Ford Motor Company's 1,200 lb. steam plant—A.S.M.E. meeting 822
Ford vertical-compound turbine generator at River Rouge *382
Ford's English plant to employ high pressure 244
Ford's River Rouge plant opened *479
Grain elevator on Hudson Bay builds steam plant *775
Grand Lake station, New Brunswick—new steam plant to correct power factor. E. G. Wilson *557
Harvard Medical power extension precipitates dust electrically. G. K. Sauerwein *226
Herndon steam station for San Joaquin Light & Power Corp. to be started.. 658
Hershey Company's new plant goes in service 307
Industrial boiler plant design. H. Bleibtreu *493
Kansas City municipal steam plant *408
Kirkstall power station in England completed 216
Los Angeles proceeds with 60,000 kw. steam station 845
Lucky Strike factory gets cheap power by combined generation and purchase. L. H. Morrison *780
Marine critical-pressure boiler and high-pressure turbine *870
Miles City—single unit plant shows high efficiency. C. M. Garland *42
Northeast Station—High pressure boiler and turbine operation. J. A. Keeth.. *304
Outdoor mercury-vapor plant of General Electric at Schenectady *621
Paper mill reduces steam consumption 30 per cent per unit production (Abitibi Power & Paper Co.). Hurter & Stuart. *639
Potomac Electric plans new station at Washington 514
Record of 400 lb. operation in an industrial plant. G. R. Hofmann 84
St. Denis steam power station. R. H. Andrews *921
Seal Beach plant at Los Angeles plans new unit 549
Servicing aircraft production at Hartford *20
Severn steam-electric power station *543
Siam—electric power station. Walter Buchler *129
Soviet turbine plant in Leningrad *515
Station A at San Francisco—operating features (Pacific Gas & Electric Co.). C. E. Steinbeck *697
Tacoma plant condenser intake found defective 692
United Light & Power Company at Lincoln—new plant bleeds steam for district heating and process *885
Waste-heat boilers supply steam to copper refinery (Ontario Refining Co.). W. F. Mills *851
Waukegan steam station of Public Service Co. has new turbine-generator 548
Winterset, Iowa—power cost reduced by modern Diesel equipment. C. F. Lambert *4
Wisconsin steam plant to be completed soon 35

POWER SERVICES
California plant gets "power-factor rate". 909
Departments pay cash for steam and electricity (Thomas A. Edison Plant) *188
Diesel stand-by power in Kearney plant of Central Power Co. Edward Swan.. *708
Economics and rate making (Ed.) 696
Hotel accountants and power costs (Ed.) 627
International Nickel Company has five hydro plants for power. W. E. Gillespie *485
Lucky Strike factory gets cheap power by combined generation and purchase. L. H. Morrison *780
Master chart applied to five widely differing plants *737
Master chart of the power services *732
New York City grants lighting franchise to real estate company 914
Paper mill reduces steam consumption 30 per cent per unit production (Abitibi Power & Paper Co.) Hurter & Stuart. *639

Page

Pennsylvania Railroad signs contract for power with Baltimore utility 548
"Power and the public" discussed by Political Academy 717
Power cost control applied to an industrial plant (chart) *766
Records turn meter readings into profits. *775
Servicing aircraft production at Hartford, Conn. *20
United Light & Power Company at Lincoln—new plant bleeds steam for district heating and process *885
Waste-heat boilers supply steam to copper refinery (Ontario Refining Co.). W. F. Mills *851
Waterwheels and motors drive pulp mill grinders (Abitibi Power & Paper Co.). A. T. Hurter *796
Power transmission by roller chains. W. A. Warrick *152
Preheaters—More data desired on air heater performance (Ed.) 41
Pressures. See High pressures and temperatures.

PROCESS STEAM
Dividing load between industrial turbines *278
"Don't waste exhaust steam" is the whole story of heat balance *280
Effect of oil in exhaust steam 336
Low pressure bugaboo (Ed.) 224
Mercury vapor for process plants (Ed.). 556
Practical record of 400 lb. operation in an industrial plant. G. R. Hofmann. 84
Reduce demand charge on process steam (Ed.) 590
United Light & Power Company at Lincoln—new plant bleeds steam for district heating and process *885

PUBLIC UTILITIES
Block plants—vulnerable precedent (Ed.) 884
Electric power production of public utility plants for nine months of 1930 690
Electric power production of public utility power plants for six months of 1931 216
Grand Haven Diesel plant costs. C. A. Hamilton *418
Herndon, Cal., substation completed 69
High pressure boiler and turbine operation at Northeast Station. J. A. Keeth *304
Hongkong electric supply system expanding. Walter Buchler *610
Indiana can regulate rates of city plant, court decides 143
Interstate power regulation (Ed.) 920
Iowa—temporary stay granted against tax 68
Kansas City municipal steam plant *408
Kansas City municipal water and light plant *292
Los Angeles Power Board investigation. 70
Los Angeles proceeds with 60,000 kw. steam station 845
Missouri Commission lacks power over municipal plants 879
Missouri Court decides against instalment buying 108
Modern Diesel equipment reduces power cost at Winterset, Iowa. C. F. Lambert *4
New York City grants lighting franchise to real estate company 914
Santa Cruz upheld in purchase of pumping unit 725
Seattle light department cuts wages 915
Single unit plant shows high efficiency. C. M. Garland (Montana-Dakota Power Co.) *42
Starts study of holding companies 213
United Light & Power Company at Lincoln—new plant bleeds steam for district heating and process *885

PULVERIZED COAL
Accepted practice in pulverized-fuel firing *266
Grindability of coal 248
Grindability of coal (Ed.) 346
How pulverized coal burns as shown by the microscope. Douglas Henderson. *116
Location of pulverized coal igniter. J. G. Brider 613
Location of pulverized coal igniter. P. Richardson 400
Maintenance of pulverizer parts. M. C. Carver 893
New furnace forces air through pulverized coal *65
Pulverized cracking still coke and absorber gas as boiler fuel (Toledo Refinery of Standard Oil Co.) *150
Sales of pulverizers decrease 690
Under the microscope. Douglas Henderson 541
Under the microscope. E. H. Tenney.. 401
Welded equipment for the power plant. G. G. Landis *90
Pulverizers—Sales decline 34

PUMPS
Auxiliary sealing line for pump stuffing box. H. M. Spring *944
Butane as fuel pumped through same pipe that conveys gasoline. G. L. Lindsay *354
Centrifugal boiler-feed pump operating with throttled discharge. Clark, Keefe 400
Centrifugal pump difficulty 945

(*) Illustrated. (Ed.) Editorial.

Page

Centrifugal pump operated at low ratings. Millard, Saunders, Potter, Knoy, Sorrells 139
Centrifugal pump packing. G. B. Longstreet *425
Chart for cost control of water-pumping plant *754
Check valve on pump replaced by magnet brake *53
Float switch size important 897
House service and fire pumps in Lincoln Building. Corbalis & Devaughn *710
Hydraulically operated check valve prevents waterhammer. R. A. Osbourne. *714
Kansas City pumping station *292
Leakage loss in centrifugal pumps — A.S.M.E. meeting 826
Locating rocker spools 434
Overhead tank method of priming centrifugal pumps. H. M. Spring *245
Pounding of feed water pump 98
Pumped storage hydro-electric plants in Europe. W. E. Winkler 562
Pumping gravel 650
Repairs to outside packed plunger pump. C. H. Paeplon *300
Santa Cruz upheld in purchase of pumping unit 725
Saving possible with dual pump drive. H. M. Spring 897
Selection and operation of centrifugal pumps. Marin Phillips *861
Specifications for selecting pumping equipment. R. H. Parrish 389
Steam-driven vacuum pumps in conjunction with feed-water heaters. Spring, Jones, Ulrich, Knoy, Finch, Sheehan, Hoffman 544
Supervisory control pipe-line pumping station operation 788
Synchronous-motor drive for municipal pumps. A. E. Beardmore *530
Synchronous-motor-driven pump equipped with unloader *644
Turbulence in centrifugal pumps — A.S.M.E. meeting 827

Q

QUESTIONS AND ANSWERS

Adding water to lubricating oil from Diesel crankcases before it is passed through centrifuge 28
Capacity of steam-generating plant increased to meet additional load 580
Condition of ground connections 651
Deconcentrator vs. continuous blowdown. 720
Delta connected banks of transformers in parallel 875
Excessive crankcase lubrication of an oil engine 840
Feed water pressure in boilers operation on pressure of 430 lb. 174
Hoist motor affects electric lamps 617
Installation of steam-driven vacuum pumps in conjunction with feed-water heaters 544
Keeping a grill room cool 910
Location of idler on belt of air compressor to prevent slipping 508
Megohm meters 98
Multi-stage centrifugal pumps of single-suction or double-suction runners ... 138
Oil ignition torch for boilers using pulverized fuel 210
Operating non-return valves 687
Operation of induced-draft fan after new economizers are installed 332
Relative merits of dry vacuum pumps and steam air ejectors 947
Removing static from belts 473
Scale removed from condenser tubes 368
Squirrel-cage motors with loose connections between rotor bars and end rings 302
Starting of back pressure turbine 434
Steam trap capacity for handling condensate from 4-in. turbine supply line 248
Superheater safety valve pop pressure. 60
Turbines with condensers used to furnish heating system hot water in winter. 402
Water level in jet condenser automatically maintained 805

R

Railroads—Diesels for railcar service. O. F. Allen *864

REFRIGERATION

Armour & Company generating and refrigerating compressor room *293
Brine agitation in the ice freezing tank. Leon Buehler, Jr. *706
Capacity of refrigerating compressor ... 580
Chart for cost control of compressor refrigeration plant *760
Chart for cost control of absorption refrigeration plant *762
Coils quickly defrosted. D. J. Allison .. *431
Combined CO_2 and ammonia refrigerating system 508
Compound compressors for refrigerating plants. Hans Freund *232
Constant pressure for hydraulic regulators. H. M. Spring *705
Diesel-ammonia compressor unit installed at Long Beach ice plant *560
Dual-pressure refrigeration reduces power costs. W. B. Kitzmiller *527
Edison building in Los Angeles cooled by electricity. H. L. Doolittle *348
Flooded-ammonia evaporator. R. F. Sorrells *389
Frozen brine heat tables issued by Standards Bureau 585
Gases in refrigerating system 402
Handling modern refrigeration plants. C. J. Chase *297
Heat balance of an ice plant. M. F. Knoy *192
Hot water and cold air from a refrigerating system. B. F. Randel 400, A. F. Sheehan 57
Ice-freezing tank welded without distortion. I. E. Scott 352
Ice-making machine *647
Ice melting rate 686
Keeping a grill room cool. Knoy, Martin, Hudson, Anderson, Cramer 910
Model refrigerator plant *810
Non-condensable gas in the refrigerating plant. Leon Buehler, Jr. *891
Pounding in ammonia compressor 910
Purging of condensers 473
Solid CO_2 plant to be erected using stack gases in San Francisco 725
Trends in the design of refrigerating coils. R. S. Wheaton *456
United States Cold Storage Company engine room *292
Water required for ammonia condenser. 60
Why air agitation in ice cans? L. R. Baker 135, 208, M. F. Knoy 365, H. Miller 432, L. E. Pollard 329, W. F. Schaphorst 24, F. C. Wagner *329
Refuse incinerator in Paris generates by-product power. Jules Colon 55

RESEARCH

Additional research projects supplementary to May 26, 1931 166
Boiler feedwater studies started by Joint Research Committee 725
Hydraulic Research Institute started at Iowa University 880
Piezometer investigations — A.S.M.E. meeting 828
SO_4—CO_3 ratio for prevention of boiler scale—A.S.M.E. meeting 829
Steam table research—A.S.M.E. meeting. 821
Wire rope research by A.S.M.E. 479
Roller-chain drives, lubrication and maintenance. W. A. Warrick *235
Roller chains selected to suit the drive. W. A. Warrick *196
Roller chains used for power transmission. W. A. Warrick *152
Ropes for elevators. See Cables.
Russia — Elevator specifications standardized. R. P. Valtier 323

S

Safety. See Accidents and accident prevention.

ST. LAWRENCE RIVER

Canadian and U. S. Officials favor project. 35
Developments (Ed.) 696
Hearings postponed 514
Joint engineering board called to settle plans 775
New York body calls hearings 443
Opposition growing in Quebec 880
Stimson rejects New York's demands ... 690
Waterway treaty may be handled by diplomatic representatives 108

SMOKE ABATEMENT

Bituminous Coal Conference shows interest in dust and smoke abatement *790
Checking chimney smoke 687
Harvard Medical power extension precipitates dust electrically. G. K. Sauerwein *226
Many smoke laws lack understanding (Ed.) 448
Measurement of smoke density and soot fall. W. A. Carter *678
New York violations reduced 85 per cent 691
Regulations in principal American cities and Canada (table) 462
Smoke inspectors to attack fly ash problem 62
"Where there is smoke there is fire" (Ed.) 114
Wind recorder for smoke abatement ... *307
Smoke Prevention Assn.—Plan to attack fly ash problem 62
Soot blower operation at Mad River (Ohio Edison Co.). J. W. Mikels *940
Southwestern Power Conference (Ed.) 414
Southwestern Power Conference *436

STANDARDIZATION

Carbon brush standards to be revised ... 218
International standards for petroleum products 845
New national safety code for elevators approved 340
1931 electrical code approved 442
Pipe standards approved by A.S.T.M. 515

STEAM

Detroit Edison completes its high-temperature installation. R. M. Van Duzer, Jr. *591
Draining high-pressure steam mains *674
Draining industrial equipment *867
Flow of steam through orifice into heating system radiators. Sanford & Sprenger *102
Heat content of steam 508
Heating a solution with superheated steam. E. C. Keefe 169
Paper mill reduces steam consumption 30 per cent per unit production (Abitibi Power & Paper Co.). Hurter & Stuart *639
Preheating air with steam 616
Quality corrections in engine performance. 173
Salts in boiler feed water reduce priming. C. W. Foulk *165
Steam table research—A.S.M.E. meeting 821
Superheating steam by reducing 60
Trapping low pressure steam lines. E. P. Wilson *245
Use of steam calorimeter for high pressures 840
Why high-pressure steam has low total heat. R. F. Sorrells 572
Steam. See also Heat.

STEEL

Brazing carbon steel. B. W. Wheeler .. 503
Chart specifies composition of weldable steel 53
Structural steel and pipe welding at A.W.S. meeting *504
Stoker Manufacturers' Assn.—annual meeting 656

STOKERS

Air ejector for chain grate siftings. T. M. Street *299
Banking fires on overfeed stokers. H. M. Spring 533
Design and operating features of traveling and chain-grate stokers *932
Factors in successful stoker operation .. *264
Incubator stoker or caking tipple for handling the low volatile fines. C. Pritchard 208
Operating characteristics of overfeed stokers *858
Sales of stokers first half of 1930 and 1931 216
Sales increase 34
Stoker sales decrease 690
Underfeed stokers for heating, industrial and power boilers *898

SUPERHEATERS

Detroit Edison completes its high-temperature installation. R. M. Van Duzer, Jr. *591
Proper settings of superheater safety valve. M. P. Jared 170
Setting of superheater safety valves. R. Septor 541
Superheated steam from boiler 910
What pressure should superheater valve be set to operate. Spring, Wertheim, Byrne, Bescaby, Jones, Mayes 60
Surface tension of a liquid 946

T

TANKS

Cleaning fuel-oil storage tanks 599
Ice-freezing tank welded without distortion. I. E. Scott 352
Steam heater for exposed water tanks. W. A. Cooil *366
Telegraph code goes into use 92
Temperature. See High pressures and temperatures.
Thermometer calibration outfit. J. R. Connelly *230
Third International Conference on Bituminous Coal (Ed.) 779
Stresses need for stability in the industry *790
Transformers. See Electricity.
Turbine-electric drive not discredited (Ed.) 115

TURBINES—STEAM

Airplane driven by steam turbine to be tested 514
Benson steam generator at Langerbrugge, Belgium 927
Capacity of unit consisting of turbine at 200 lb. pressure and condenser. Dreyer, Martin, Shank, Maynz 402
Chart for cost control of engine or turbine plant *748
Cutting in oil cooler shuts down turbine. George Rosentreter 390
Detroit Edison completes its high temperature installation. R. M. Van Duzer, Jr. *591
Development in recent years. Prof. Dr. Wewerka 719
Dividing load between industrial turbines *278
Exhaust turbines for ships 6
Ford Motor Company's 1,200 lb. steam plant—A.S.M.E. meeting 822
Ford vertical-compound turbine generator at River Rouge *382
High pressure boiler and turbine operation at Northeast Station. J. A. Keeth. *304
Jointing material for steam turbines diaphragms. R. M. Norton 872
Kansas City Power & Light Company turbine room *293
Mechanical features of turbines at Bremo station of Virginia Electric Co. J. D. Schmidt *676
Noise in shaft gland 473
Operating problem of starting of back-pressure. Byrne, White, Longstreet, Miller 434
Performance of turbines (Ed.) 520

(*) Illustrated. (Ed.) Editorial.

Page

Seal Beach plant at Los Angeles plans new unit 549
Soviet turbine-generator plants produce large units 144
Soviet turbine plant in Leningrad *515
Station A at San Francisco—operating features (Pacific Gas & Electric Co.). C. E. Steinbeck *697
Turbine drive for auxiliaries. J. H. Lawrence 945
Turbine generator installed at Battersea. *915
Turbine inspection (Ed.) 920
Waukegan steam station of Public Service Co. has new turbine-generator.. 548
West Point orders new power equipment 775
Why the ship's turbine would carry only half load. J. S. Isdale 207

TURBINES—WATER

Diablo plant of Seattle *540
Dnieper River development to have largest hydro-generators *879
Propeller turbines in Middle West. H. T. Porter *449
Sweden to have largest-diameter hydro turbines. E. N. Webb 716
Vargon plant in Sweden to use largest-diameter hydro turbines *372
Turbulence, does it help in burning of pulverized coal? (Ed.) 2

V

VALVES

Check valve stops waste of condensing water. A. J. Dixon *207
Clearance of Corliss valves 174
Control for pressure-reducing valve. H. M. Spring *59
Fitting Corliss valves. Donald Raeburn. 432
Gate valve with broken stem opened under pressure. A. Pullekins *638
Hydraulic butterfly valves — A.S.M.E. meeting 827
Operating non-return valves 687
Operating sequence of boiler blowdown valves 302
Proper settings of superheater safety valve. M. P. Jared 170
Repairing a small needle valve..... 492
Setting of back-pressure valve 686
Setting of superheater safety valves. R. Septor 541
Setting valves of large gas engines. R. C. Laney *490
Standard dimensions for flanged valves proposed 914
Standard valve markings wanted by purchasing agents 69
Temporary valve repairs prove permanent. B. F. Powell *23
Uniform valve marking (Ed.) 77
Ventilating. See Heating and ventilating.

W

WASTE

Meter or waste (Ed.)..... 313
Method of feeding wood waste *574
Paper mill obtains 75% of steam from refuse-burning boilers and electric steam generators (Abitibi Power & Paper Co.). Hurter & Stuart *639
Water—Compression of liquid water. R. C. H. Heck *422
Water measurement methods (Ed.) 312

Page

WATER POWER

Ariel hydro-electric plant in operation.. *845
Bagnell Dam in service (Union Electric Light Co. of St. Louis) *725
Bagnell hydro plant placed in operation 657
Beauharnois Co.—Canada annuls license 217
Beauharnois—first two units completed. 846
Beauharnois development — investigation started 34
Beauharnois development's progress (Picture feature) 326
Beauharnois inquiry ends 181
Beauharnois inquiry goes on 68
Beauharnois project to be reorganized.. 307
Beauharnois work should continue (Ed.) 224
Brush Creek, Cal.—Pacific Gas & Electric Co. to build plant 774
Chart for cost control for hydro plant.. *744
Chart simplifies water flow problems. Robt. Ball 202
Chats Falls project *442
Cohoes plant 100 years old *950
Developed water power doubles in ten years 213
Diesel stand-by power in Kearney plant of Central Power Co. Edward Swan.. *708
Dnieper River development to have largest hydro-generators *879
Flow conditions of Susquehanna River discussed 217
Hoover Dam—completed line brings 40,000 hp. to dam 35
Hoover Dam—first tunnel holed through 548
Hoover Dam power not to be bought by San Bernardino 307
Hydraulic butterfly valves — A.S.M.E. meeting 827
Hydraulic Research Institute started in Iowa University 880
Hydraulically operated check valve prevents waterhammer. R. A. Osbourne.. *714
Hydro power provides revenue for irrigation works. H. A. Brown *663
International Nickel Company has five hydro plants for power. W. E. Gillespie. *485
Kanawha River project seeks license.... 515
Los Angeles water way dynamited; hydro safe 692
Lynchburg hydro plant rebuilt and enlarged 811
Madden Dam construction to start.... 879
Maintenance methods that reduce hydro-plant operating costs. J. E. Housley (Tallassee Power Co.) *124
Maintaining equipment in hydro electric plants. J. E. Housley 239
Mokelumne River development placed in operation by P. G. & E. Co..... *142
Mokelumne development — Salt Springs and Tiger Creek power houses (Pacific Gas & Electric) *426
Muscle Shoals—joint board appointed to prepare plan 109
Niagara-New York tie-in approved by Commission 724
Organizing hydro electric inspection and maintenance. J. E. Housley *54
Pacific Coast hydro developments (Picture feature) 94
Piezometer investigations — A.S.M.E. meeting 828
Possibilities of water power (Ed.) 778
Propeller turbines gain favor in Middle West. H. T. Porter *449
Pumped storage hydro-electric plants in Europe. W. E. Winkler 562
Rock Island development. T. B. Parker. *398
Rock Island project changes to save $300,000 480
Safe Harbor-Baltimore 220-kv. line completed *844
Safe Harbor plant on Susquehanna River. *584
Safe Harbor units in service 9 mo. ahead of schedule 878
Statistics may be misleading (Ed.)..... 41
Sweden to have largest diameter hydro turbines. E. N. Webb 716
Tiger Creek power house completed *341
Trenton Falls hydro-electric station to be rebuilt by Utica Gas & Electric..... 774
Tunnels in San Francisquito Canyon to be enlarged 726
Umbrella-type waterwheel generators reduce hydro plant costs. H. B. Crandall. *358
Waterwheel—Pelton couldn't sell eastern rights for $2,000 357
Waterwheels for Beauharnois and Chats Falls developments (Picture feature) 868
Waterwheel had curved buckets *502
Waterwheels of ancient lineage. O. H. Truman *872
Waterwheel stopped automatically by home-made device. J. G. Craft..... *785
Waterwheels and motors drive pulp-mill grinders (Abitibi Power & Paper Co.). A. T. Hurter *796
Wyman Dam nears completion *514
Water power. See also St. Lawrence River.
Water supply, key to improved information on (Ed.) 3

WATER TREATMENT

Boiler compound feeder. L. W. Ross.... *170
Boiler water conditioning. L. R. Baker. 873
Continuous blowdown at Anheuser-Busch. A. B. Stickney *19
Eliminating trouble through water treatment *272
Establish fellowship for boiler feedwater study 142
Foaming and priming from soda ash.... 98
Hot-process softener compared with evaporator. J. D. Yoder 496
Maintaining proper feedwater conditions. J. B. Swift 472
Salts in boiler feedwater reduce priming. C. W. Foulk *165
Standard boiler water condition. J. B. Swift 363
Tube failures in 1,400 lb. boilers (Mannheim boilers) *542
Wanted—a feedwater Moses (Ed.)..... 149
Wanted—a feedwater Moses. F. G. Straube 682
Why the water softener capacity dropped off. W. W. Dingwall 246
Water treatment. See also Feedwater.
Water wheels. See Water power.

WELDING

Acetylene drum explosion 950
Chart specifies composition of weldable steel 53
Diesel-engine frames welded (Ed.)..... 381
Diesel engine frames welded *405
Fire tube boiler welded. R. L. Booth... 873
Fusion welded drums authorized by A.S.M.E. boiler code committee..... 107
Ice-freezing tank welded without distortion. I. E. Scott 352
Pipe and fittings welded in heating installations—A.W.S. meeting 505
Pipe welding and test featured at convention of International Acetylene Assn... *774
Second Lincoln arc welding contest entries 691
Structural steel welding (Ed.) 484
Structural steel and pipe welding at A.W.S. meeting *504
Welded equipment for the power plant. G. G. Landis *90
Welded piping for high temperature lines (Ed.) 3
Windmills, horsepower of 686

X

X-ray analysis part of manufacturing industry 543

Y

Yugoslavia—electric power supply expanding. Nikolay Von Kotschubey..... *645

(*) Illustrated. (Ed.) Editorial.

AUTHOR INDEX

ADAMS, ORVILLE. Practical man vs. the theorist 838.
Allen, Oliver F. Application of Diesels to rail-car transportation *864. Diesel as an auxiliary to central power systems *670. Diesel engine: world viewpoint *522. Diesel locomotive solves railroad problems *928. Large oil engine for central station service *596. Sulzer Brothers build 10,800 hp. Diesel *786.
Allison, J. Durability of steam boilers 839. Quick defrosting of refrigerator coils *431. Steadying the level in water tube boilers *299. Trapping leakage through cylinder stuffing box *96.
Altizer, D. J. Conveniences in the power plant make for efficiency 23. Regulating device for Corliss-engine dashpots *838.
Anderson, Elmer N. Relative merits of dry vacuum pumps and steam air ejectors 947. Steam-capacity of generating plant 581.
Anderson, J. W. Scavenging limitations of high speed two-cycle Diesels 205.
Anderson, William. Employee advancement by stepped wages or stepped jobs 22. Keeping a grill room cool 911. Explosions from flooded oil furnaces 649. Improving maintenance methods 612.
Andrews, R. H. St. Denis heralds new era in French steam practice *921.
Arnester, J. D. Improper feeder connection floods heating boiler *677.

BAKER, C. T. "Why air agitation in ice cans?" 208.
Baker, L. R. Boiler water conditioning 873. Filtering Diesel lubricating oil 503. Water added to oil before cleaning 28. Why air agitation in ice cans? 135. One compensator starts two induction motors *944.
Ball, Robert. Chart simplifies water flow problems 202.
Bato, Andrew A. Size of boilers for laundry plant 247.
Beardmore, A. E. Synchronous-motor drive for municipal pumps *530.
Benneche, C. P. Effect of turbulence in steam radiators *169.
Bescaby, F. E. What pressure should superheater safety valve be set to operate? 61.
Bidwell, H. Handling low-volatile fines 576.
Birder, J. G. Igniting pulverized fuel 210.
Blackmon, Hendley N. How Deion and Deion-grid circuit breakers operate *161.
Bleibtreu, H. Industrial boiler plant design *493.
Bohn, D. I., and H. W. Papst. Conductors for heavy alternating currents *171.
Booth, R. L. Welded fire tube boiler 873.
Bradley, V. A. Repairing loose bars in squirrel-cage rotors *330.
Braley, H. D. Fuse performance in circuit-interrupting service *130. Fuse performance in relay service *200. Thermal cutouts for protecting alternating-current motors *703.
Brewer, Allen F. Steam cylinder lubrication of modern high-pressure engines *564.
Brider, John G. Pulverized coal igniter 613.
Brodie, F. E. Loose rotor bars on motors 303.
Brown, Hugh A. Hydro power provides revenue for irrigation works *663.
Buchler, Walter. Hongkong electric supply system expanding *610. In far-off Siam *129.
Buehler, Leon Jr. Brine agitation in the ice freezing tank *706. Non-condensable gas in the refrigerating plant *891.
Busillo, M. How faulty water circulation was improved *682.
Byrne, Hugh J. High feed line pressure in boiler 174. Operating problem of starting of back-pressure turbine 434. Removing scale in condenser tubes 369. Steam trap capacity for handling condensate drainage 248.

CAMPBELL, GRANT. Boiler gage glass readings are misleading *925.
Carter, W. A. Measurement of smoke density and soot fall *678.
Carver, M. C. Maintenance of pulverizer parts 893.
Chase, C. J. Handling modern refrigerating plants *297.
Christfield, John G. Removal of static from belts 473.
Christie, A. G. Future cost of power 908.
Cilley, P. Megohm meters 98.
Clark, Robert F. Operating a centrifugal boiler-feed pump with throttled discharge 400.
Colon, Jules. Paris refuse incinerator generates byproduct power 55.
Connelly, J. R. Practical outfit for thermometer calibration *230.
Conroy, Walter L. Removal of static from belts 474.
Constable, P. C. Steam trap capacity for handling condensate drainage 248.
Cooil, W. A. Steam heater for exposed water tanks *366.
Cook, Howard B. How hoistway door operation affects elevator service 608.
Corbalis, B. C., and W. Devaughn. Flexibility features pump equipment in the Lincoln Building *710.
Craft, J. G. Home-made device stops waterwheel automatically *785.
Cramer, R. E. Keeping a grill room cool 911. Operation of fan when economizers are installed 332.
Crandall, H. B. Umbrella-type generators reduce hydro plant costs *358.
Cucci, V. J. How faulty water circulation was improved *365.
Cuzner, Charles R. High feed line pressure in boiler 175.

DARLING, A. G., and A. PALME. Variable-ratio voltage control for industrial-plant transformers *894.
David, E. V., and W. S. Farr. Expansion fits with liquid air 506.
Devaughn, W., and B. C. Corbalis. Flexibility features pump equipment in the Lincoln Building *710.
Dias, P. Challenge to engineers 58. Igniting pulverized fuel 211.
Dieffenbach, E. C. Motor applications for drives requiring speed changes *80.
Dingwall, W. W. Emergency repair on a Diesel engine cylinder 567. Long exhaust line on two-cycle engine causes trouble 57. Water added to oil before cleaning 29. Why the water softener capacity dropped off 246.
Dixon, A. J. Check valve stops waste of condensing water *207. Improving contact of engine bed with foundation *168. Remedying troublesome feed-water heater *300. Stabilizing an engine foundation *135.
Doolittle, H. L. Edison buildings heated and cooled by electricity *348.
Dreyer, George. Capacity of unit consisting of turbine at 200 lb. pressure and condenser 402. Removing scale in condenser tubes 368.
Dunlap, B. M. Loose rotor bars on motors 303.
Durgin, C. M. Engineers as inventors 715.

EATON, MILTON. Electric steam generators controlled automatically *458.
Elliott, A. E. Light circuit disturbed by hoist motor 617.
Ely, Howard. Light circuit disturbed by hoist motor 617.
Emerson, Grady H. Megohm meters 98. Induction motors for frequent reversing 637.
Evans, J. C. Systemized power management saves dollar in industrial plant *903.

FARR, W. S., and E. V. DAVID. Expansion fits with liquid air 506.
Finch, H. H. Steam-driven vacuum pumps in conjunction with feedwater heaters 545.
Fish, E. R. Pressure vessel inspector's job 328.
Ford, Louis B. Cooling small Diesel engines *453.
Foulk, C. W. Salts in boiler-feed water reduce priming *165.
Fox, Alfred W. Steam capacity of generating plant 580.
Freund, Hans. Compound compressors for refrigerating plants *232.
Friend, H. M. How many engineers are now unemployed? *600. Is customer inspection of plant equipment necessary? 321. Keeping the engineer employed 835. New control cables have improved characteristics *666.
Frost, W. P. Equalizing the load on elevator ropes 684.
Fuller, R. M. Cost of free engineering 716.

GALLO, PHILIP M. Flexibility of plain and creased pipe bends *906.
Garland, C. M. Single-unit plant shows high efficiency *42.
Gaudy, R. J. Improving the evaporator for industrial use *164
George, G. M. Repairing steam injector nozzles 59.
Gibbons, James O. G. Misapplication of engineering terms 97.
Gillespie, W. E. Supplying power to the world's largest nickel works *485.
Glen, Ray B. Reducing power consumption of magnetic contactor coil 715.
Goss, H. A. Operation of fan when economizers are installed 333.
Gould, G. B. Paradox of coal prices 429.
Gray, Frank L. Tests on lubricants for turbine and engine service 64.
Gutzwiller, W. E. Mercury arc rectifiers applied to industrial loads *44.

HADLEY, S. A. Diesel engines as peak load units 578.
Hahn, Gordon R. Relative merits of dry vacuum pumps and steam air ejectors 947.
Hamilton, B. W. Making insulation tests with a megohm meter 367.
Hamilton, C. A. Costs at Grand Haven Diesel plant 418.
Hawkins, G. A., A. A. Potter and H. L. Solberg. Purdue high-pressure boiler *798.
Hayes, O. What pressure should superheater safety valve be set to operate? 61.
Heck, Robert C. H. Compression of liquid water *422.
Hellmer, R. E. Water level in jet condenser automatically maintained *805.
Henderson, Douglas. How pulverized coal burns as shown by the microscope *116. Pulverized coal under the microscope 541.
Hermann, C. C. Reheating compressed air 452.
Hill, Harold H. Operation of fan when economizers are installed 333.
Hirschberg, S., and A. M. Houser. Flexibility of plain and creased pipe bends *568.
Hofmann, G. R. Practical record of 400 lb. operation in an industrial plant 84.
Hoffman, C. F. Steam-driven vacuum pumps in conjunction with feedwater heaters 545.
Hoffman, K. B. Megohm meters 99.
Houser, A. M., and S. Hirschberg. Flexibility of plain and creased pipe bends *568.
Housley, J. Elmer. Maintaining equipment in hydro-electric plants 239. Maintenance methods that reduce hydro plant operating costs *124. Organizing hydro-electric inspection and maintenance *54.
Hudson, J. I. Keeping a grill room cool 911.
Hulton, Thomas C. Diesel piston trouble solved by rearranged cooling system *22. Heavy oil in solid injection Diesels 59. Position of idler to prevent slipping of belt 509. Water added to oil before cleaning 28.
Hurter, A. T. Motors and waterwheels drive pulp-mill grinders *796.
Hurter, A. T., and G. L. Stuart. Paper mill reduces steam consumption 30 per cent per unit production *639.
Hutchinson, E. C.—Foreword. Better relations 695. Business is business 413. Business recovery and unemployment 777. Buyer and seller relations 379. Confidential information 447. Engineer's competition 625. Fair play 919. Fictitious prices bait 661. Killing the goose 815. Lessons of the depression 729. Power executives' responsibility 345. Power problem of the smaller plant 212. Pre-order acceptability 849. Purchaser's self-justification 483. Purchasing ethics 519. This page 311.

ISDALE, J. S. Why the ship's turbine would carry only half load 207.

JAMES, J. R. Moving coal cheaply from dock to car *636, *906.
Jaquay, F. E. Switch houses designed for exterior operation *126.
Jared, M. P. Proper settings of superheater safety valve 170.
Jenkinson, C. V. Chart for determining thickness of pipe *673.
Johnston, W. S. Corrosion prevention by metal composition 121. Corrosion prevention by protective coatings 155. Corrosion: what it is 87.
Jones, A. L. Steam-driven vacuum pumps in conjunction with feedwater heaters 544.
Jones, P. What pressure should superheater safety valve be set to operate? 61.
Jones, William C. Position of idler to prevent slipping of belt 509.

KATES, EDGAR J. Combustion chambers of American high speed Diesels *92.
Keefe, E. C. Heating a solution with superheated steam 169. Operating a centrifugal boiler-feed pump with throttled discharge 400.
Keeth, J. A. High-pressure boiler and turbine operation at Northeast Station *304.
Keller, Jay H. Providing for free flow of air in heating return lines *136.
Kershaw, John B. Review power history at Centenary meeting of British Assn. 577.
Kitzmiller, W. R. Dual-pressure refrigeration reduces power costs *527.
Knoy, M. F. Centrifugal pump operated at low ratings 139. Heat balance of an ice plant *192. High feed line pressure in boiler 175. Keeping a grill room cool 910. Raw-water ice without air agitation? 365. Steam-driven vacuum pumps in conjunction with feed-water heaters 545. Water added to oil before cleaning 29.
Krieg, Edwin H. Gage-glass readings may belie true water level *48.

LAMBERT, C. F. Modern Diesel equipment reduces power cost *4.
Landis, George G. Welded equipment for the power plant *90.
Laney, R. C. Setting valves of large gas engines *490.
Lawrence, John H. Turbine drive for auxiliaries 945.
Leech-Porter, J. Megohm meters 98.
Lindsay, G. L. Pipe line engines burn butane *354.
Longstreet, George B. Operating problem of starting of back-pressure turbine 434. Packing centrifugal pumps *425.
Loveless, W. R. Unit heaters prove economical in large single-area building *51.
Low, F. R.—Foreword. Analysis or intuition? 113. Appreciation 555. Boiler makers become steam-plant builders 147. Thomas A. Edison 589. Merry Christmas 883. Orderly use of time 223. Pursuit of happiness 75. Repeat orders 1. Shopping 185. Stringency 40. Valedictory 257.

Long, Leonard. Water level in jet condenser automatically maintained *805.
Lynn, C. Quick-response excitation for alternating-current machines *498.

MacKAY, RALPH E. Connecting two motors to drive the same load 329.
Maleev, V. L. Hydrogen sulphide corrosion in natural gas engines *127.
Markland, A. R. Handling irregular condensate return 839.
Markle, L. E. Speed control for large wound-rotor motors *575.
Martin, W. H. Capacity of unit consisting of turbine at 200 lb. pressure and condenser 403. Keeping a grill room cool 911. Lubricating oil cleaned by pressure filtration *646. Position of idler to prevent slipping of belt 508. Steam capacity of generating plant 580.
Matthews, Robertson. Diesel fuel-injection principles 907. Engineers as inventors 472. Why so much excess air for oil engines? 612.
Maxwell, F. R. Repairing loose bars in squirrel-cage rotors 330.
Maynz, Theodore. Capacity of unit consisting of turbine at 200 lb. pressure and condenser 403. Steam capacity of generating plant 580.
McHugh, A. C. Writing in 96.
McVicker, G. G. Improvised tube cutter for return-tubular boilers *58.
Merrell, E. E. Rise of pressure in boiler-feed line 367.
Meyer, J. W. Supercharging is one answer *576.
Mikels, J. W. Soot blower operation at Mad River *940.
Millard, S. G. Centrifugal pump operated at low ratings 138.
Miller, C. A. Operating problem of starting of back-pressure turbine 434.
Miller, C. O. Light circuit disturbed by hoist motor 617.
Miller, H. Why air agitation in ice cans? 432.
Miller, Thomas E. Reducing power consumption of magnetic contactor coils 136.
Mills, Ellis. One compensator starts two induction motors *501.
Mills, W. F. Waste-heat boilers supply steam to copper refinery *851.
Moore, W. H. Design of reinforcing plate for cracked stuffing box gland *246.
Morrison, L. H. Lucky Strike factory gets cheap power by combined generation and purchase *780. Navy's attitude toward American Diesels *14.
Mullikin, H. F. Composite gas sampler for boiler gases *837.
Myers, A. H. How many engineers are now unemployed? 839. Is customer's inspection of plant equpiment necessary? 503.

NEALEY, J. B. Natural gas burned under new 1,400 lb. boilers at Deepwater, Texas *78.
Nelson, Carl C. Automatic unloading of synchronous motors 244. Emergency full-voltage starting of synchronous motors 399. Manual and automatic control for synchronous motors 607. Synchronous motors start and stop automatically *457.
Newton, R. H. Revamping old converters improves operation *831.
Nichols, S. E. Removal of static from belts 474.
Noble, James E. Adjusting idler pulley to prevent belt slippage *613. Condensate receiver made from discarded boiler drum *301.
Norton, Robert H. Jointing material for steam turbines diaphragms 872.
Nutter, J. C. Loose rotor bars on motors 303.

OATLEY, H. C. Removing scale in condenser tubes 368.
Olive, C. E. Light circuit disturbed by hoist motor 617.
O'Regan, W. F. Position of idler to prevent slipping of belt 509.
Osbourne, R. A. Hydraulically operated check valve prevents waterhammer *714.
Overly, Curtis L. Copper wire for cylinder-head gasket *95.

PACKARD, ROLAND A. Position of idler to prevent slipping of belt 509.
Paeplon, C. H. Repairs to outside-packed plunger pump *300.
Palme, A., and A. G. Darling. Variable-ratio voltage control for industrial-plant transformers *894.
Papst, H. W., and D. I. Bohn. Conductors for heavy alternating currents *171.
Parker, T. B. Progress on the Rock Island development *398.
Parrish, R. H. Effect of damper regulation on boiler efficiency 648. Some pointers on burning fuel oil 702. Specifications for selecting pumping equipment 389.
Parry, H. L. Operation of fan when economizers are installed 333.
Pearson, H. E. Measuring temperatures in rotating machinery *324.
Peterson, J. Willard. Filtering Diesel lubricating oil *401.
Phillips, Marin. How frequently should inspections be made? 611. Motor-installation rules simplify maintenance 430. Scheduling maintenance work for reliable operation 356. Selection and operation of centrifugal pumps *861.
Pierson, L. A. Educational work of N.A.P.E. 803.
Pittman, William. Proper adjustment of crank-pin box *134.
Plaisted, H. M. Air cushion in belt drives 95.
Pollard, L. E. "Why air agitation in ice cans?" 329.
Porter, H. T. Propeller turbines gain favor in Middle West *449.
Porter, J. C. Igniting pulverized fuel 211.
Potter, A. A., G. A. Hawkins and H. L. Solberg. Purdue high-pressure boiler *798.
Potter, R. E. Centrifugal pump operated at low ratings 139.
Powell, B. F. Eliminating oil drip on a revolution counter *96. Temporary valve repairs prove permanent *23.
Pritchard, C. Incubator stoker or caking tipple for handling the low volatile fines 208.
Pullekins, A. Gate valve with broken stem opened under pressure *638.

RAEBURN, DONALD. Employee advancement by stepped wages or stepped jobs 331. Fitting Corliss valves 432. Hand-scraping oil engine bearings 168, 246. Navy's attitude toward American Diesels 472.
Rainey, Ralph. Igniting pulverized fuel 211.
Rairden, A. S. Unequal loading decreases elevator rope life *683.
Randel, B. F. Hot water and cold air from a refrigerating system 400.
Rasmussen, A. C. Steam trap capacity for handling condensate drainage 248.
Rasmussen, J. F. Position of idler to prevent slipping of belt 508.
Rhodes, S. H. Loose rotor bars on motors 303.
Richardson, Edward Adams Why so much excess air 803.
Richardson, P. Location of pulverized-coal igniter 400.
Richardson, P. K. Removing scale in condenser tubes *369.
Ricketts, E. B., and C. H. Sanderson. Application of automatic combustion control 100.
Romig, John W. Accounting fundamentals applied to purchased and generated power 605.
Rosenberg, S. Is customer-inspection of plant equipment necessary? 648. Removal of static from belts 474.
Rosentreter, George. Cutting in oil cooler shuts down turbine *390.
Ross, L. W. Boiler compound feeder *170. How faulty water circulation was improved *24.
Ryan, William F. Operation of high-pressure boilers *261.

SACHS, H. W. Removal of static from belts 474.
Sanderson, C. H., and E. B. Ricketts. Application of automatic combustion control 100.
Sanford, Sterling S., and Carl B. Sprenger. Flow of steam through orifice into heating-system radiators *102.
Saunders, M. G. Centrifugal pump operated at low ratings 139.
Sauerwein, G. K. Harvard Medical power extension precipitates dust electrically *226.
Schaphorst, W. F. Increasing boiler capacity 682. "Why air agitation in ice cans?" 24.
Schmidt, J. D. Mechanical features of turbines at Bremo *676.
Schweitzer, P. H. Advantages of offset diagrams in checking oil engine operation *158.
Scott, I. E. Welding an ice-freezing tank without distortion 352.
Septor, R. Setting of superheater safety valves 541.
Shank, L. E. Capacity of unit consisting of turbine at 200 lb. pressure and condenser 403.
Sheehan, A. F. Changes in theater heating save fuel and power *123. Hot water and cold air from a refrigerating system 57.
Sheehan, Thomas. Loose rotor bars on motors 303.
Sheehan, A. F. Steam-driven vacuum pumps in conjunction with feedwater heaters 545.
Shepherd, H. F. Oil engine operation depends upon the governor *287.
Shutt, C. C. Fans cool totally inclosed synchronous motors *396.
Simons, John P. Relative merits of dry vacuum pumps and steam air ejectors 947.
Simpson, William. Removal of static from belts 474.
Solberg, H. L., A. A. Potter and G. A. Hawkins. Purdue high-pressure boiler *798.
Sorrells, R. F. Advantages of the flooded-ammonia evaporator *389. Centrifugal pump operated at low ratings 139. High feed line pressure in boiler 175. Why high-pressure steam has low total heat 572.
Sprenger, Carl B., and Sterling S. Sanford. Flow of steam through orifice into heating-system radiators *102.
Spring, H. M. Auxiliary sealing line for pump stuffing box *944. Banking fires on overfeed stokers 533. Care of rotary-type mechanical oil burners 134. Constant pressure for hydraulic regulators *705. Control for pressure-reducing valve *59. Expansion in boiler-feed piping may cause trouble *857. Megohm meters 98. Overhead tank method of priming centrifugal pumps *245. Saving possible with dual pump drive *897. Steam capacity of generating plant 580. Steam-driven vacuum pumps in conjunction with feedwater heaters 544. What pressure should superheater safety valve be set to operate? 60.
Steinbeck, C. E. Operating features of Station A *697.
Stickney, A. B. Burning low-quality coal at Anheuser-Busch plant *243. CO_2 controls combustion in Anheuser-Busch plant *204. Continuous blowdown at Anheuser-Busch, Inc. *19.
Stilwell, J. C. Loose rotor bars on motors 302.
Straube, Frederick C. Wanted—a feed-water Moses 682.
Street, Thomas M. Air ejector for chain-grate siftings *299. Feeding coal to elevator with compressed air *247.
Stuart, G. L., and A. T. Hurter. Paper mill reduces steam consumption 30 per cent per unit production *639.
Swan, Edward. Diesel stand-by power in a hydro-electric plant *708.
Swift, J. B. Maintaining proper feed-water conditions 472. Standard boiler water condition 363.

TENNEY, E. H. Pulverized coal under the microscope 401.
Thorn, John. Venting drain pipe seal *367.
Tingley, E. M. Precision water-level gage *331.
Towlson, J. T. Gripping foundation bolts for heavy machines *247. Tapping a steam main under pressure *301.
Truman, O. H. More waterwheels of ancient lineage *872.

ULRICH, P. L. Steam-driven vacuum pumps in conjunction with feed-water heaters 544. Steam trap capacity for handling condensate drainage 248.

VALTIER, R. P. Russia standardizes elevator specifications 323.
Van Duzer, R. M., Jr. Detroit Edison has completed its high-temperature installation *591.
Van Maarion, John. Relative merits of dry vacuum pumps and steam air ejectors 947.
Veenschoten, V. V. Rise of pressure in boiler-feed line 366.
Vivian, C. H. Care and operation of air compressors *294.
Von Kotschubey, Nikolay. Electric power supply expanding in Yugoslavia *644.

WAGNER, F. C. "Why air agitation in ice cans?" *329.
Walker, P. H. Repairing brick chimneys *209.
Warden, Guy L. Removal of static from belts 474. Steam trap capacity for handling condensate drainage 248.
Warrick, W. A. Lubrication and maintenance of roller-chain drives *235. Power transmission by roller chains *152. Selecting roller chain to suit the drive *196.
Webb, E. N. Largest diameter hydro turbines for plant in Sweden 716.
Wertheim, F. E. What pressure should superheater safety valve be set to operate? 61.
Wewerka, Prof. Dr. Development of the steam turbine in recent years 719.
Wheaton, R. S. Trends in the design of refrigerating coils *456.
Wheeler, Burton W. Brazing carbon steel 503.
White, John L. Operating problem of starting of back-pressure turbine 434.
Whiting, W. S., Jr. Practical method of renewing cable sheaves *57.
Whitlock, Wallace. Designers and operators should cooperate 432.
Whiton, Louis C. Jr. Practical comments on the maintenance of air heaters *936.
Willett, Hazen F. Light circuit disturbed by hoist motor 617.
Williamson, G. V. Division of turbine load by the increment method 300.
Willey, C. W. Improved design of pipe line hanger increases stability *97.
Willis, P. A. Operation of fan when economizers are installed 333.
Wilson, E. G. New Grand Lake steam plant to correct power factor *557.
Wilson, E. P. Trapping low-pressure steam lines *245.
Wilson, George I. Position of idler to prevent slipping of belt 509.
Winkler, W. E. Pumped storage hydro-electric plants in Europe 562.
Wisinski, J. F. Adjusting idler pulley to prevent belt slippage *613.
Wright, Collins. Delaying needed improvements cuts down profits 397.
Wulfinghoff, F. A. Max. Condenser research shows effect of tube arrangement *534.
Wyatt, W. A. Loose rotor bars on motors 303

YARNALL, D. ROBERT. Yarnall-Waring 2,500-lb. boiler *801.
Yoder, J. D. Hot-process softener compared with evaporator 496.

ZITZEWITZ, ELMER. Proper care will prevent anti-fraction bearing trouble 433.